A WINDOW OPEN ON THE WORLD

The UNESCO Courier

MAY 1961 (14TH YEAR)

PRICE : 50 CENTS

ANDRÉ MAUROIS SPEAKS OF BOOKS AND OF LIBRARIES

STUDY OF HANDS

How much effort and how many motions are made in getting out of a car? Strobophotography captures each of these successive movements which the eye does not see. Here in a negative, the positions of the hands are easily distinguishable. For a positive of this picture see "Strobophotography: What the Eye Cannot See", page 28.

Photo © André J. Salesse-Lavergne, Paris

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Photo © Steven Trefonides

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ANDRÉ MAUROIS SPEAKS O
AND OF LIBRARI E

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S OF BOOKS IES

BY ANDRÉ MAUROIS
of the French Academy

OUR civilization is the sum of the knowledge and memories accumulated by the generations that have gone before us. We can only partake of it if we are able to make contact with ideas of these past generations. The only way to do this—and so become a "cultured" person—is by reading.

Nothing can take the place of reading—no lecture or image on a screen has the same power to enlighten. Pictures are a most valuable means of illustrating a written text, but they hardly enable us to form general ideas. Films, like the spoken word, flow by and are lost to us. Books abide, as life-long companions.

Montaigne confessed to needing three kinds of communion—love, friendship and books. All three are much the same. One can love books—they are always faithful friends. I would even say that I have often found them wittier and wiser than those who wrote them. A writer puts the best that is in him into his books. His conversation may sparkle, yet it does not endure. But one has never finished wrestling with the mysteries of a book.

Moreover, this friendship can be shared, without jealousy, by millions of people all over the world. Writers like Balzac, Dickens, Tolstoy, Cervantes, Goëthe, Dante or Melville are a wonderful bond between people who appear to be poles apart. A Japanese, a Russian or an American may be a stranger to me, but he and I have mutual friends—Natasha in *War and Peace,* Fabrice in *La Chartreuse de Parme* and Micawber in *David Copperfield.*

Books can take us out of ourselves. None of us has had enough personal experience to know other people—or, indeed, himself—thoroughly. We all feel lonely in this vast, irresponsive world. We suffer because of it; we are shocked by the injustice of the world and the hardships of life. But from books we learn that others—greater men than we—have suffered and have sought as we have.

Books are our gateways into other minds and other peoples. Through them we can escape from the narrow little world we live in and from fruitless brooding over our own selves. An evening spent reading great books does for our mind what a holiday in the mountains does for our bodies. We come down from those lofty heights stronger, our lungs and our mind cleansed of all impurities, and we are better equipped to face with courage the battles on the plains of daily life.

Books are the only way in which we can learn about past ages, and are the best key to an understanding of social groups that we never frequent. The plays of Federico Garcia Lorca can teach me more about the soul of Spain than twenty trips to the country as a tourist. Chekhov and Tolstoy have revealed to me some aspects of the Russian soul which are still true today. Saint-Simon's *Mémoires* have made a France long dead live again for me, just as Hawthorne's or Mark Twain's novels have helped me to visualize an America that has vanished. And my delight is all the greater because of the amazing likeness between these worlds, so remote from us in time and space, and the world we live in.

Human beings all have a great deal in common. The passions that move Homer's kings are not unlike those felt by generals in a modern alliance. When I was lecturing on Marcel Proust to students at Kansas City, those Middle West farmers' sons saw their own likeness in the French characters. "There is, after all, but one race—the human race." Even the great differ from us not in essence but in degree, and that is why the lives of great men are of such interest to us all.

Thus, one reason why we read is to get beyond our own

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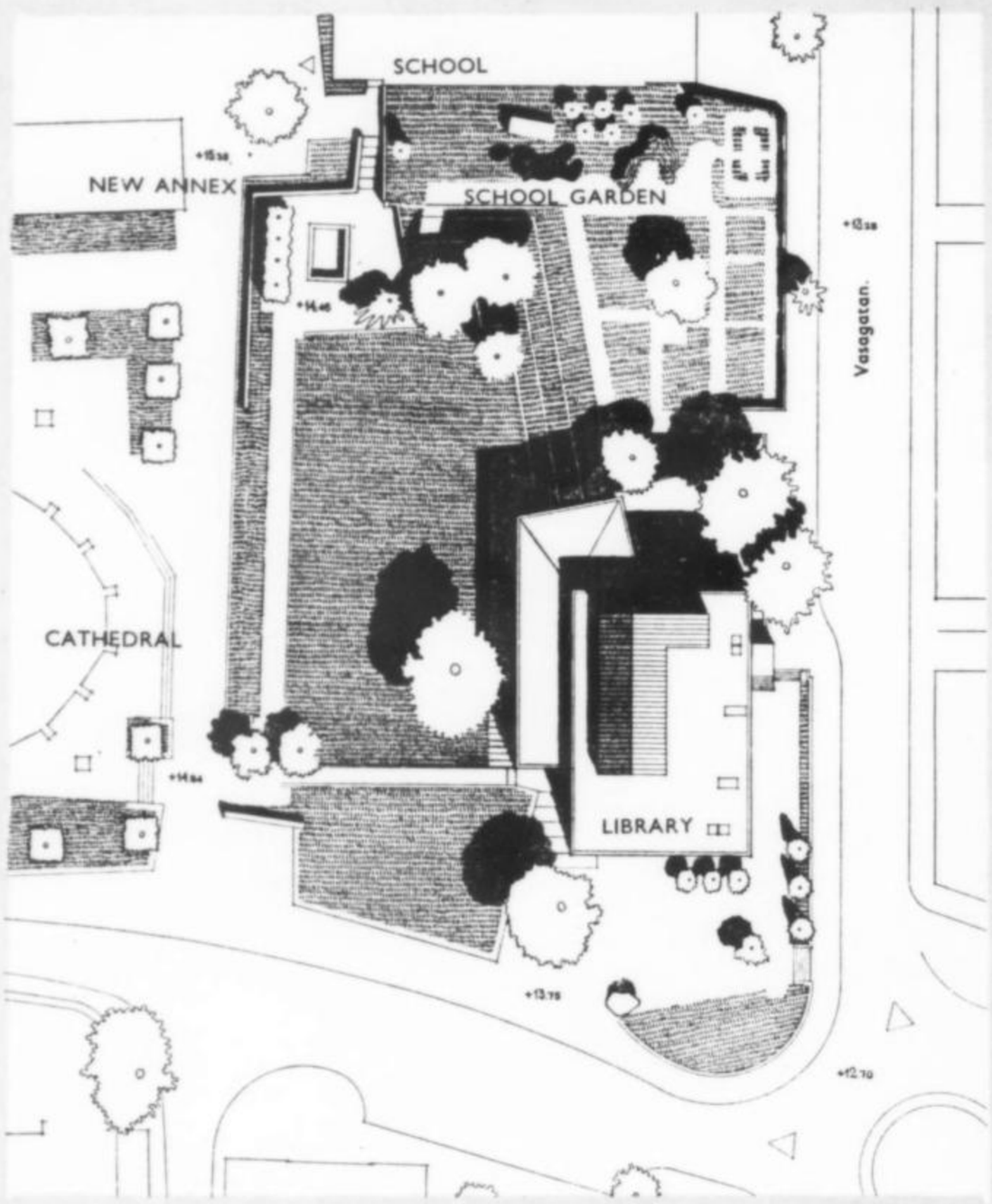
SWEDEN'S GARDEN-GIRDED MODERN LIBRARIES



A few years ago the people of Vasteras, Sweden, built a modern library in the heart of their small city. Plans were drawn up to construct the building near the town's school with gardens surrounding it and a view of the city's historic cathedral. The very modern building and interior shown here are like many constructed throughout the Scandinavian countries. Sweden, for example, with a population of less than eight million, has 3000 public libraries housing more than 13 and one-half million books.

ANDRÉ MAUROIS SPEAKS OF BOOKS AND LIBRARIES *(Cont'd)*

lives and understand those of others. But this is not the only reason for the pleasure we derive from books. In everyday life we are too involved in what is happening to see events clearly, too much under the sway of our emotions to savour them properly. The lives of many of us would make a novel worthy of Dickens or Balzac, but we get no pleasure from the experience—quite the contrary. The writer's task is to give us a faithful picture of life, but to keep it far enough away for us to be able to appreciate it without fear or entanglement.

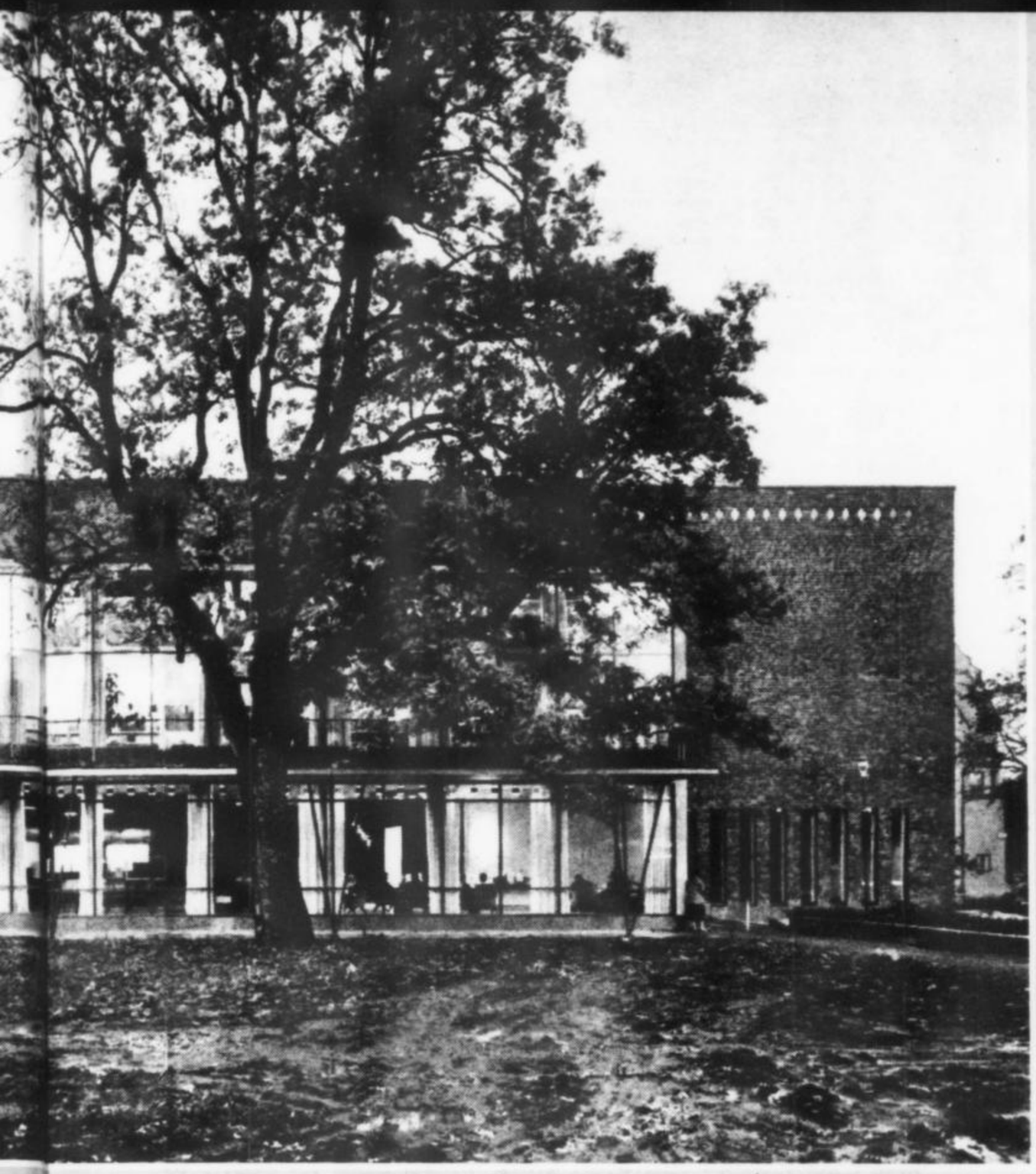
A person reading a great novel or biography lives a great adventure without disturbance to his peace of mind. In the words of Santayana, art brings before our eyes what we cannot find in action—the union of life and peace. To read history is good for our health of mind; it teaches us moderation and tolerance, and shows us that the terrible disputes over which civil wars or world wars were once fought are now mere wrangles, dead and buried. And that is a lesson in wisdom and in the relativity of values. A great book never leaves the reader the same as he was before—he is always a better man for having read it.

Nothing, then, is more important for mankind than to bring within the reach of all, these means of broadening our horizons, escaping from ourselves and making discoveries which literally transform life and make the individual a more valuable member of society. And the only way to do this is through public libraries.

We are living in an age in which, in an increasing number of countries, all people have equal rights, share in the work of government and shape public opinion, which, by its influence on governments, determines in the last resort the choice of peace or war, justice or injustice —in short, the life of the nation and the world as a whole. This power of the people, which is democracy, demands that the masses, who have become the source of authority, should be well informed on all important problems. I agree that, ever more and more, they are receiving this instruction in the schools, but the work of the schools cannot be complete without libraries to back it.

Listening even to the best of teachers will not of itself produce a trained mind—the pupil must think and reflect. The teacher's task is to provide a sound framework which must then be filled in by the pupil himself—essentially, by reading. No pupil, no student, however brilliant, can hope to do all over again by himself what mankind has taken thousands of years to evolve. All worth-while reflection is, above all, reflection on the ideas of great writers. History would be of little value if it were reduced to facts and ideas which can be explained in a few hours by a school-teacher. But if the student, under the teacher's guidance, searches among memoirs, witnesses' accounts and statistics to find the fabric of history itself, then he will learn a great deal about life.

Reading is more than invigorating mental exercise; it makes young people realize that truth lies hidden, that it never yields itself ready-made to those who search for it but must be pieced together by them by dint of labour, methodical work and sincerity. The library is an essential companion to school and universiy. *I would go so far as to say that education is but a key to open the doors of libraries.*



Plan and photos from the book "Landsbiblioteket Vasteras."

This is even more true of adult education. The citizen of a democracy who wishes to fulfil his duties conscientiously must go on learning all his life. The world does not stand still the day we leave our class-room.

History marches steadily on, posing problems in which the fate of the human race is at stake. How are we to make up our minds, how are we to uphold what is reasonable and oppose what is criminal folly, if we do not know what it is all about?

What is true of history is also true of political economy and of all branches of science and technology. In fifty years, man's knowledge has been revolutionized. Who will explain these changes to the men and women whose lives and happiness depend on them? Who will help them to keep abreast of the latest discoveries, and yet perform their daily task? Books, and books alone.

The public library must give children, young people, men and women the opportunity to keep in touch with their times, in every sphere. By offering them, impartially, works representing conflicting points of view, it enables them to form their own opinions and preserve that attitude of constructive criticism towards public affairs without which there is no freedom. The library, too, may reveal to them their true vocation. Through reading the works of the masters, gifted minds still uncertain of the path they should take will find themselves drawn towards science, literature or the arts and in turn will make their contribution to the common heritage of mankind.

Finally, and above all, a well-chosen library open to all will enrich the inner lives of its readers. Now that the machine, partly replacing man, has given him more leisure, this leisure must be used to the best advantage both of individuals and of society. Games, sport and travel will help, no doubt, but nothing will do as much as reading to produce well-furnished minds with a broad human outlook.

Just as scientific and historical works train men's minds, so, too, will novels and plays develop their sympathies. A reader who knows the great writers of a country well is no longer a stranger there, even if he has never visited the country and does not speak its language. *Every library is a centre for international understanding.* By its very existence, free from propaganda and prejudice and with no axe of its own to grind, the public library serves peace as well as democracy.

A modern public library is therefore an active, dynamic institution. It goes half-way to meet the reader, anxious to know his needs and meet them, and to attract him by offering various ways and means of obtaining information, cultivating his mind and finding relaxation. The library's collections must be suited to this purpose. Reference works—dictionaries, encyclopaedias, bibliographies, atlases and chronologies—must be there for all to consult. The historical section should contain both general works (world history, history of the principal countries, particularly that of the library's home country, the history of the arts, literature and science) and also monographs on local history. The biography shelves will always attract readers. Books on geography, travel and science and technical works are also essential.

As for the classics, only those should be chosen which still have their faithful band of readers. Great poets are few and it is quite easy to make a collection of their works. Novels and plays are the biggest problem. The abundance is such that some omissions, however unfair, are unavoidable. The main thing is that the library should possess the works of the great writers of all countries.

But the collections must also include technical and professional works and textbooks on various trades and crafts, especially those practised in the district where the library is situated. The library must cater for the needs of its readers and reflect the local economic structure. There should be free access to the shelves. Card catalogues must be available to guide the reader to the book he wants and to show him, by the classification system,

CONT'D ON NEXT PAGE

ANDRÉ MAUROIS *(Cont'd)*

THE INALIENABLE RIGHT TO READ

what publications the library has on the subject in which he is interested.

A modern public library's programme also includes various cultural and educational activities—talks, debates on literary, artistic or social questions, exhibitions, theatrical or cinematographic performances and concerts. In various ways these activities lead people towards books and stimulate the craving to read.

Thus a public library is a real centre of culture, propagating human knowledge and dispensing delight. It is a channel for the spread of ideas and provides the members of the community with a means of making intelligent use of their leisure. Its influence is not confined to its immediate neighbourhood but reaches the people in country districts, who have long been very poorly served. Some villages may have a school library, but it does not always lend books to adults. Besides, its stock of books is very small, and an inquiring mind soon exhausts its resources. Some countries have an excellent public library network. In other places, similar schemes of great interest and promise for the future have been tried. Regional libraries have been established in the chief town of a province or district and these supply mobile libraries which take books to rural communities.

In each of these communities, some centre—the municipal library, a school library, or the town hall—is chosen to serve as a deposit station and someone (usually the teacher) is put in charge, to give readers advice and, if possible, encourage people to read. The director of the central library trains these local librarians and they in their turn train the readers. In country districts the public library is a co-operative venture.

This is one system; there are others, but wherever there is a public scheme for reading in country districts this system has met with immense success among the inhabitants. It is of the utmost importance that it should be organized throughout the world. It is not a luxury—not just a way for country people to spend their leisure—although that in itself is valuable enough; it is essential, because it is only through books and reading that civilization can be spread.

THERE is truth in the saying that today the right to read is one of man's inalienable rights. All men and women must have free access to books. Books, if they are given the chance, will transform human beings, by making them the heirs to the accumulated experience of past generations.

It is in early life that a taste for books and the habit of reading are most easily acquired. A public library must have a "children's corner." Most children have not enough money to buy books, nor have their parents enough money to give them books. Only in a library will they find good books, which will save them from reading mediocre or dangerous ones. Although the school library is useful, it is often inadequate, owing to lack of funds. To an intelligent child, shelves full of books among which he is free to browse open up a veritable paradise.

But it is at home, in the evening, or in a garden during the summer days, that a child will enjoy most of all a long and delightful read. A bright child with a thirst for knowledge is a voracious reader. He will come to the library to work and do his homework, because he will find the library an intellectual centre, where he can listen to stories, or take part in play reading, and later on in group debates.

This children's corner should not be too big. It is important for the librarian to get to know each of the children who come there, from the recluse who likes to be left to himself to the hesitating child who needs guidance. The setting should be bright and colourful, so that the idea of books may be associated in the child's mind with a feeling of well-being. One cannot fail to be impressed by the good behaviour of young readers. Reading teaches them consideration for others.

The library will of course co-operate with the teachers of the local schools and with the children's parents. When a teacher is studying a particular subject with his pupils, he may ask for a small exhibition on the subject to be organized by the library. He may suggest that the library purchase books which would be useful to his class. Mothers who accompany their youngest children to the library may find themselves acquiring a taste for reading.

The children's library should not serve too narrow a purpose. It should lead on to the adults' library. For a librarian who loves his work, there is nothing more interesting than watching a child grow into an adolescent. There comes a day when children's books cease to interest the young reader and one senses that he is ripe for the great writers. This is the moment to guide him towards the general library and advise him on books he should choose to begin with. If he likes, a children's librarian can be second to none as an awakener of young minds.

THE librarian plays a tremendous part in community life. He has the culture of mankind in his keeping and serves as an intermediary between the products of that culture, accumulated throughout the ages, and the people who are alive and working today. There are so many books, and they are turned out so fast that nobody can even know which ones he ought to read, let alone read them all. The specialist runs the risk of wasting his whole life uselessly doing again the work that has already been done by someone else. Like a planter who has sown too prolific a species and is stifled by the very crop he has raised, the reader without guidance is likely to be swamped by the vastness of man's culture.

The librarian can and should protect him. A good bibliography and a detailed catalogue can guide people through the jungle of man's accumulated knowledge. The year's crop of books, gigantic though it is, is at once digested and assimilated by libraries. Since the number of books makes it increasingly difficult to find what one is seeking, it is essential that the classification system should be constantly improved. It is the task of the great libraries—and therefore of their librarians—to blaze wide trails through this forest, which otherwise would soon become impenetrable. It is their duty, too, to see that everything the human mind has produced is preserved.

Even in a small public library, the work of the librarian is of no less importance. In a mass civilization such as ours, no moral or technical progress can be regarded as truly achieved unless it reaches all levels of the population. The librarian who does his work well helps to bring this about. It has been said that he acts like a filter between the flood of books and the people's thirst for knowledge. This means that he must not only know his job but also possess a sound general culture.

HE will need this, too, when building up his library. Admittedly when he takes up his post, he will inherit a stock of books from his predecessors. It is important, however, that he should both use his funds to the best advantage every year in order to add to this stock the best new books that have appeared and, even as far as older works are concerned, should fill up the gaps in his library in the light of his own experience and public demand.

In every library, the librarian acts as an adviser. He guides people in their reading, and shows them how to consult the card-index and use the collections. In fact, apart from professional qualifications, the job of being a

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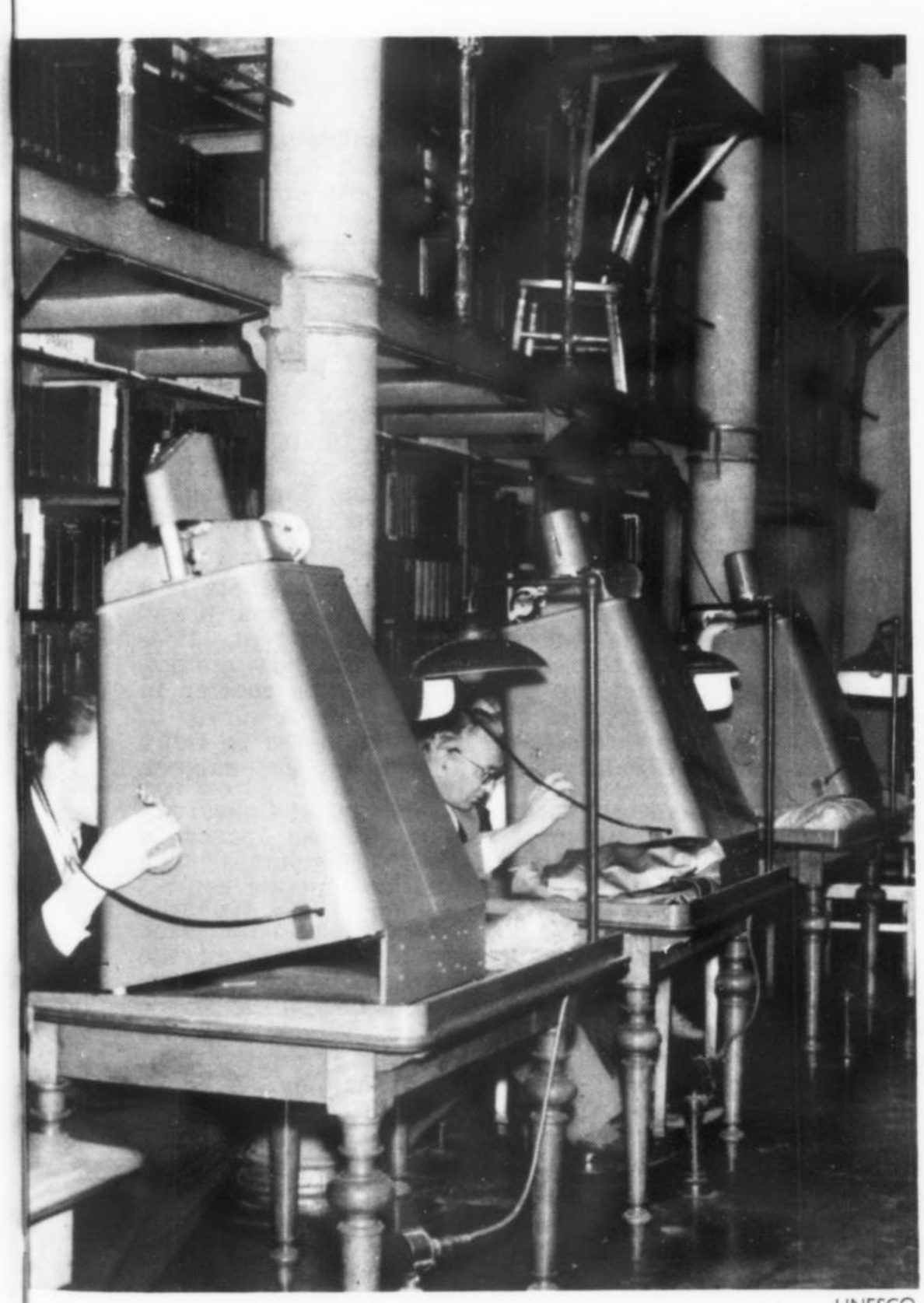


UNESCO

MORE THAN LENDING BOOKS

Modern libraries throughout the world provide many services besides the traditional lending of books. One of the world's most modern libraries in Louisville, Kentucky, U.S.A., houses two FM radio stations with a complete control room for the wire network (above). The two stations broadcast twelve hours a day, seven days a week, all year round. A library card at this library entitles you not only to borrow books, but also films, records, paintings, and even an umbrella on rainy days. Many public libraries like the one below at Medellin, Colombia, sponsor regular art shows. Another rapidly growing service of public libraries is microfilm viewers which permit visitors to study books, documents and newspapers on film not available in the original. The battery of viewers at left is in the Royal Library, Stockholm.

UNESCO

Latecomers take a short-cut through the fence...

STORY TIME I

to the tree-shaded park where the story hour is about to begin...

an

ANDRÉ MAUROIS *(Cont'd)*

PILOT LIBRARIES PUT INTO PRACTICE UNESCO AIMS

librarian calls for a real passion for this noble ministry, an unbounded passion, unfailing good will and a keen desire to help those who are searching for knowledge.

In UNESCO's educational work, considerable emphasis has of course been placed on libraries. All its efforts to eliminate illiteracy would be in vain unless reading matter could be made available to those who have acquired the ability to enjoy it. UNESCO's main task is to work for peace through international culture. In this, the public library is its natural assistant.

Accordingly, UNESCO has contributed to the development of libraries, by organizing meetings of librarians from the different regions of the world, improving the system of exchanges and working methods, sending experts on mission, awarding fellowships and—most important of all—by setting up model libraries to be a driving force in the service of the community.

The most effective preaching is by example. UNESCO was the first to put into practice the advice it has given to countries and cities. It set up pilot libraries, to act both as models and testing grounds, and they have met with great success. The first pilot library was established at Delhi (India). It was founded in 1950 by the Government of India and UNESCO, and inaugurated by Mr. Nehru in 1951, its principal object being to provide reading matter for new literates, in four languages—Hindi, Urdu, Punjabi and English.

There is a travelling library, which serves fifteen neighbouring districts, in town and country. The stock of books has been rapidly enlarged, and now numbers about 165,000 volumes. About 750,000 books are borrowed every year. Analysis of the readers' age groups shows that the majority are young people—old people read little, or not at all.

The obvious explanation for this is that education has only recently made any progress in that area. Many of the reader members had not a single book, and no means of obtaining any, until the library was set up. Because of the customs of the country, few women came to the library, but in many cases the men explain that the books they borrow are for their family, and that they are often read aloud. Apart from fiction, the favourite reading is the lives of famous men and women, handbooks on arts and crafts, and the history of India.

The Delhi pilot experiment has shown that there is a great interest in reading. India's needs are many and varied, but reading is one of the most urgent. It is especially important that the needs of the new reading public should be met, by producing reading matter in all the principal languages of the country. A survey of readers' tastes and interests recently conducted by Delhi librarians provided valuable information on that subject.

UNESCO has also established a pilot library at Colombia's beautiful university city of Medellin. It was opened in October 1954, and now houses nearly 50,000 volumes. The central library, branch libraries and bookmobile centres together serve nearly a thousand readers every day.

Here, too, there has been convincing evidence of the efficacy of libraries as a driving force in popular education. As in Delhi, young people have been most eager to avail themselves of the new facility. Almost as many books have been borrowed by children as by adults. And the "children's corner" is as lively as can be. A bookmobile serves not only villages but factories as well. The central library has become a cultural centre for the whole town, providing a full and varied programme of cultural activities.

A similar scheme was launched by UNESCO at Enugu, in East Nigeria. This third experiment has proved just as successful as the first two. The library, which was

IN BROOKLYN

In New York's punishing summer heat with apartments so stifling that even TV is out of the question, the youngsters take to the parks. There the public libraries provide a summer programme of reading and games. In the borough of Brooklyn, the public library, along with eleven of its branches, holds outdoor story hours every week. The ancient magic of the storyteller is still as fresh and appealing to the present generation as it has been for children throughout all the ages.

Photos © Bernard M. Jaffe

and on the outskirts a timid child listens attentively.

opened not more than a year ago, has a stock of nearly 20,000 volumes, and serves about 6,000 readers. Here, too, a programme of educational activities supplements the work of the reading-room, and the bookmobile serves neighbouring districts. A book-box service, by rail, road or canoe will shortly bring books to isolated readers and to the inhabitants of out-of-the-way areas.

The aims of UNESCO and those of public libraries coincide, they are: to help the various peoples to know each other better; to give a new stimulus to popular education; to promote the ideal of equal opportunities for everyone to share in cultural life; to preserve and protect the immense legacy of books bequeathed by man to man; and to give all nations of the world access to the books published by every other nation. This common ideal is the best guarantee that there will be ever closer co-operation between UNESCO and libraries.

Public libraries already play a very important part in the life of modern communities, a part which, for several reasons, will certainly become still greater in the coming decades.

The number of people who can read is increasing every year, and will continue to do so. The campaign to eliminate illiteracy is being vigorously carried out throughout the world. It is certainly needed. More and more, people who cannot read feel like outsiders in their own times.

Education is not the exclusive privilege of any one class—it has become compulsory for all. As a result, hosts of readers are springing up everywhere. It is to meet their needs that so many pocket books, cheap editions and popular classics are being issued. These series are extremely popular everywhere which shows that they are meeting a need.

It is gratifying to note that the standard of the books selected is steadily improving. New readers want books of real spiritual, educational and literary value. The vast majority of mankind, however, has not the wherewithal to buy even cheap editions. For the masses, the only way to get books to read is to go to the public library. *It should be compulsory for every village to have its own public library, just as it is now compulsory for it to have a school,* of which the public library is the complement.

Economic and technical progress intensifies the need for education. It does so in two ways. In the first place, it enables people to look beyond their day-to-day needs. A poor wretch who does not know where his next meal is coming from and who has no shelter from the cold and wet has no desire to improve his mind. The higher the standard of living, the more concerned people will be with their dignity as human beings, and the greater will be their demand for the means of educating themselves.

Moreover, as machines and techniques become more and more complicated, a skilled worker has to be educated in order to do his work satisfactorily. The machine is replacing the labourer, who worked with his hands alone; the workman is becoming a technician who uses his brain. And so we see young workmen flocking to bookshops as well as to libraries in their eagerness to learn. Even agriculture, now become a science, demands of the farmer a proficiency that he can only acquire through books. *The need for learning begets a need for reading.*

Many countries are suddenly achieving self-determination—the right to self-government. This right is a just one, if it is accompanied by adequate knowledge not only of their own past, their traditions, racial and historical peculiarities, their products and consequently their economic future, but also of other countries, their history, their place in the world, their characteristics—in short, everything that is needed for the maintenance of sensible and proper relations with them.

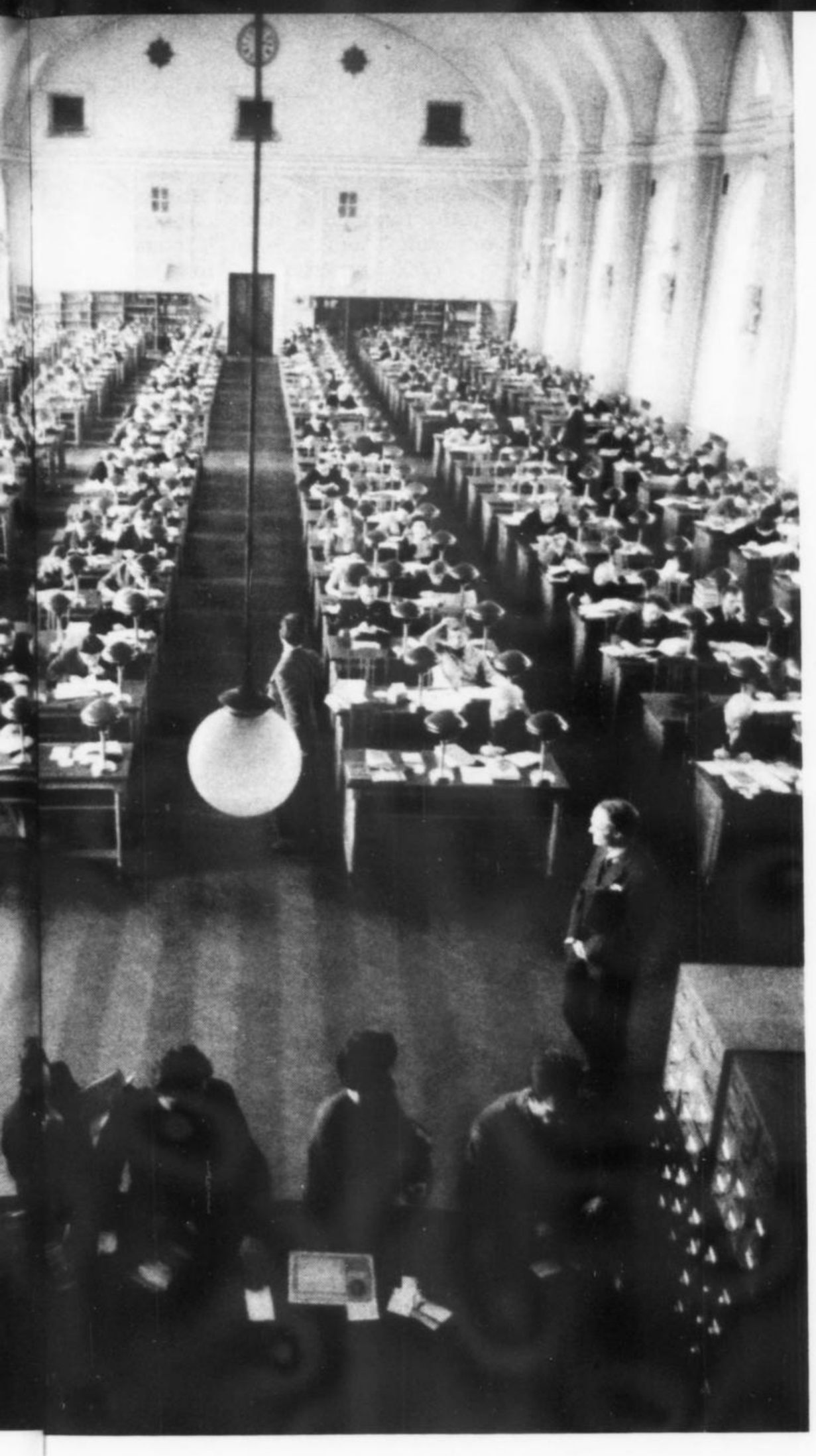
A new State, which is beginning its life as an independent nation, must have a sense of national identity. In many cases, however, the new citizens, who formerly lived without any strong bond between them and formed part of a different political system, cannot have that true, deep sense of national identity which comes from a knowledge of the past and an understanding of the present. Where can they get this knowledge? They will find it in books in which the scattered traditions have been brought together. *A library is not only a valuable instrument for the nation's use—it helps to shape the nation itself.*

Civilization creates new needs. Man today is no longer

CONT'D ON PAGE 13

UNESCO now has three pilot libraries in operation, one at New Delhi, India, another at Medellin, Colombia, and the most recent at Enugu, Nigeria. In addition, UNESCO experts have helped to establish, expand, or reorganize libraries in a host of other countries. The pilot project at New Delhi has helped to bring books within the reach of thousands of people in outlying districts thanks to the library's travelling book buses. The two youngsters above pore over the shelves in the book van as it makes its regular visit to their village. The pilot library in Enugu, Nigeria (below right), has open shelves and an ever growing number of volumes where readers may browse at will. The Kochi Citizens Library in Japan (below) is typical of more than 800 public libraries in Japan. Some smaller countries have more libraries than Japan but few can boast the astounding figure of 20 million regular readers, who probably make Japan's libraries the best attended in the world. The people of the USSR are ardent patrons of their libraries as this photo (right) of the main reading room of the Leningrad public library indicates. The USSR holds the world's record in the number of their public libraries—with a total number of more than 130,000.

UNESCO PHOTOS



content to be a pawn in the hands of powers greater than himself. He wants, as far as possible, to know and to learn. In the past, only a philosopher or a poet could say, "I am a man, and nothing human is alien to me." Today every man would like to be able to say this, because he knows that the fate of far-off peoples who are strangers to him will affect his own and also because he has become more sensitive, and is moved by an unjust deed committed at the other end of the world. *Libraries are the most important and the richest source of information on problems which concern mankind as a whole.*

Lastly, through the abundant supply of energy and the advances made in automation, our civilization, whether we want it to or not, will become more and more a civilization of leisure. It cannot be anything but gratifying to see how working hours are being shortened and man's labour eased. Nevertheless, in the long run too much leisure might become dangerous, unless tastes and interests are broadened at the same time.

Sports, games, public entertainments and television will of course help to keep people occupied, but the length of time for which they can do so will always be limited by the large amount of preparation they require, and in any case a man worthy of the name will fairly soon grow weary of being a mere spectator. *Libraries will provide him with the means of creating for himself an unending spectacle of space and time.*

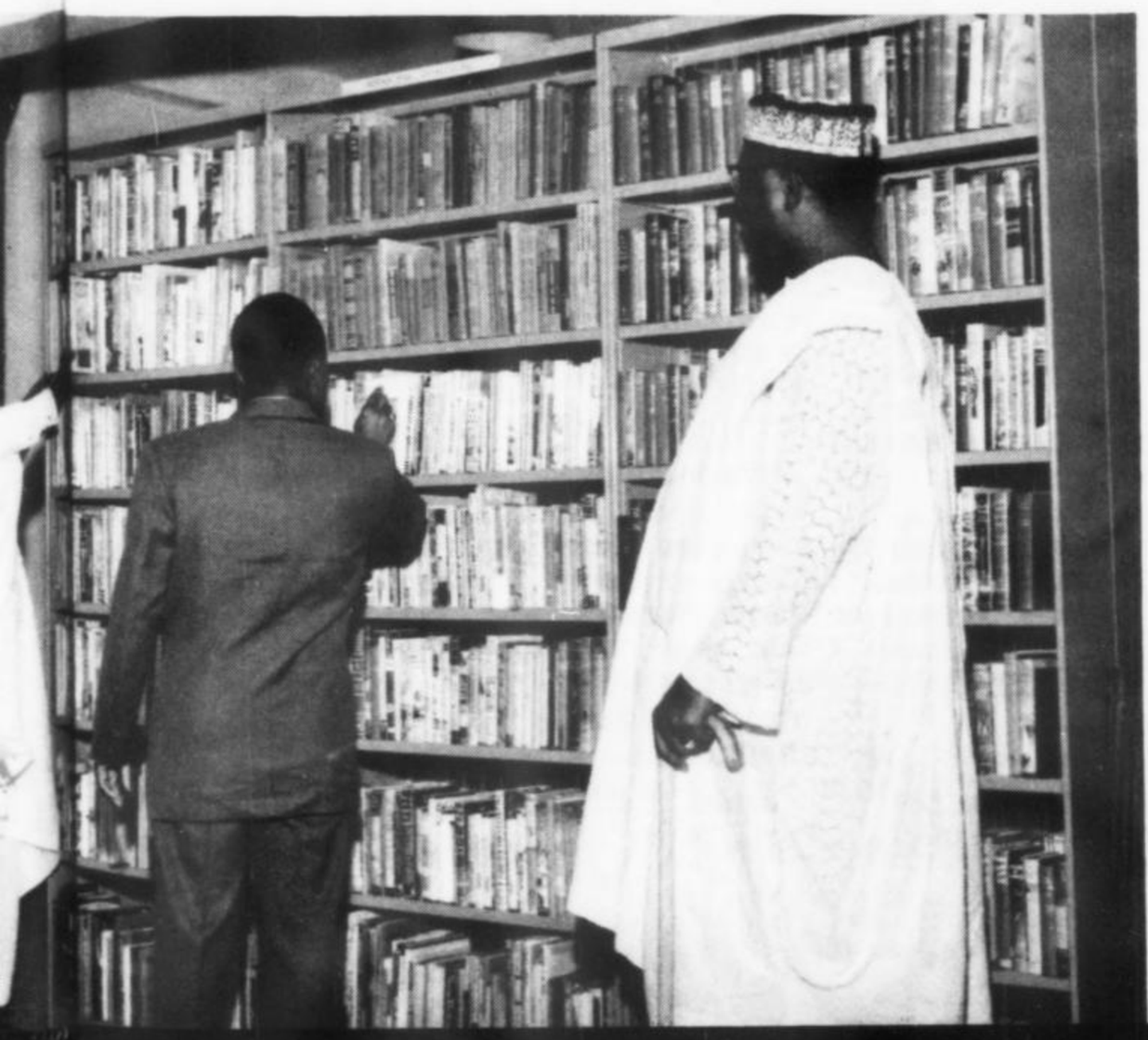
Aldous Huxley has said that "Every man who knows how to read has it in his power to magnify himself, to multiply the ways in which he exists, to make his life full, significant and interesting." It is this full life, enriched by the lives of others, that we would like all to be able to enjoy. Other mass communication media—the cinema, television, radio and gramophone records—will take new forms, spread and help mankind to share the delights of the arts. Yet none of them has so profound and lasting an effect as reading, none of them brings before us so wide a range of emotion and knowledge.

When he was opening the Eton Public Library in 1833, Sir John Herschel said "...Give a man the taste of reading, and the means of gratifying it, and you can hardly fail of making a happy man... You place him in contact with the best society in every period of history—with the wisest, the wittiest, with the tenderest, the bravest, and the purest characters who have adorned humanity. You make him a denizen of all nations—a contemporary of all ages."

We might well say to any community: "*Tell me what you give your people to read, and I will tell you who you are.*"

★

The text of this article by André Maurois has been published in an attractive illustrated booklet entitled "Public Libraries and their Mission." A limited number of copies are available free to subscribers to "The Unesco Courier". To obtain a copy, write to the Division of Libraries, Unesco, Place de Fontenoy, Paris (7e).



AN IMPORTANT BULLETIN ON LIBRARIES

A few months after the First Session of the UNESCO General Conference in April 1947, the first periodical was published by the newly organized association of states—*the Unesco Bulletin for Libraries*. The *Bulletin* began its career primarily as a means of helping war-damaged libraries to rebuild their collections by publishing information on institutions throughout the world which had books and periodicals for exchange. Now in its 14th year of publication, the *Bulletin* still continues this important service, but has gradually grown through the years in importance as an international medium on all matters concerning libraries. The Bulletin appears monthly in separate English, French, Russian and Spanish editions. The annual subscription price is $3.50, 17s. 6d (stg), 10 NF or the equivalent in local currency.

WORLD PROFILE OF LEISURE AND LEARNING

BRITONS read more newspapers than anyone else on the face of the earth, but Soviet citizens have the largest number of public library books at their disposal. No one goes to the cinema as often as an Austrian, even though Japan leads the world in the number of full-length films produced annually. The United States has the most university students, but the U.S.S.R. has the most students studying engineering.

These are only a few of the nuggets to be gleaned from 182 pages of statistical ore contained in the newest edition of "*Basic Facts and Figures*" a Unesco annual publication which, at first sight, is about as attractive reading as a bank statement or a telephone directory.

But, despite this dense packing of "international statistics relating to education, culture and mass communication" into lists of countries (no less than 219 countries and territories are mentioned), columns of figures and slabs of footnotes, a profile of our world in its learning and at its leisure can be drawn from "Basic Facts and Figures."

SOME of the data are impressive (only 59 out of 1,000 Americans do not possess radios) and some are rather startling (the world's most fortunate schoolchildren, and perhaps the world's most fortunate teachers—at least in terms of number of pupils per teacher—are to be found on St Pierre and Miquelon, two French islands off the coast of Canada, where there are only twelve children per teacher). Some of it is tragic, too, in the long ranks of nations with only 16 or 17 or 25 per cent of their school-age children actually afforded an opportunity to go to school.

Let's turn to a few of the facets of this statistical portrait (or better, panorama) of the world, because no one could hope to take in all of them in one dose.

Thumbing through the pages of "Basic Facts and Figures", you learn that the United States leads the world in the number of university students, with 3,236,414, followed by the U.S.S.R. with 2,260,000 (287,164 American students are listed as studying engineering and the parallel figure in the Soviet Union is 765,000). Next come India with 833,450 students and Japan with 636,232. France leads in Europe with 226,173 students, followed by the Federal Republic of Germany and Italy in a near dead-heat : 164,015 and 163,945 respectively.

ONE word of warning: there is not much agreement throughout the world as to what constitutes a "university student." As a famous man is supposed to have said, "There are lies, damned lies and statistics."

But the figures do show the United States also leads the world in the annual number of university graduates—438,023—followed by the U.S.S.R. with 290,700 (the two leaders change places in the figures for scientific and technical graduates—114,600 in the U.S.S.R. and 96,509 in the U.S.A.).

More foreign students—47,245, to be exact—study in the United States than anywhere else. The next biggest attraction is France with 17,456 foreign students followed by the Federal Republic of Germany with 15,115.

Rather scanty figures on over-all percentages of national income spent in 1958 on education show Puerto Rico in the lead with 6.9% and Finland second with 6,5%.

Now for a digest of what the world does in its spare time: for the Soviet citizen, there are 752,604,000 public library books, compared to 200,000,000 in the United States and 71,000,000 in the United Kingdom, the two runners-up. The U.S.S.R. also ranks first in the number of museum-goers with 39,900,000 annually, compared to 10,994,000 in the United Kingdom and 10,439,000 in Japan (the three leaders according to available figures).

Newspapers are another story. Here are the readership rates per 1,000 in the world's most newspaper-minded countries: United Kingdom, 573; Sweden, 464; Luxembourg, 429; and Finland, 420. The United States leads in the number of daily papers, 1,745, but sells them to only 327 out of every 1,000 Americans. On the other hand, 475 out of every 1,000 Americans read magazines of general interest, the highest figure in the world.

When the American buys a newspaper, he is offered an impressive number of pages. That is why newsprint consumption per capita in the United States is 33.6 kilogrammes (74 pounds), the world's highest figure, followed by 27.2 kilogrammes (60 lbs) in Australia and 25.5 Kg. (56 lbs) in New Zealand.

Other countries appear when you turn to the chapter of film attendance. Austrians are the most avid cinema-goers: 17.4 per thousand. Next come Malta with 17.3, New Zealand with 16.7 and the U.S.S.R. with 16.2. In North America, Greenland with 14.8 outstrips the United States with 12.5.

Who makes the most pictures? The answer is Japan, whose 516 full-length films in 1958 rank it first over India, 295; the United States, 288; Hong Kong, 240; France, 126; and the United Kingdom, 121.

Latest available figures (at the end of 1959) for television-viewing show that the country with the most sets per thousand inhabitants is Monaco (a staggering 524). Next are the United States, 290; Canada, 196; the United Kingdom, 195; and Bermuda, 182.

AGAIN, leadership changes hands when you turn to books. First is the U.S.S.R. with 69,072 new titles annually, followed by Japan, 24,152; the United Kingdom, 20,690; the Federal Republic of Germany, 16,552; the United States, 14,876 and France, 12,032.

The Soviet Union also published the most translations in 1958—a total of 4,457 in the various languages of the Union—followed by Germany (figures are for the Federal and the Democratic Republics) with 2,512 and Czechoslovakia with 1,462. English was the world's most translated language that year: 9,675 works out of a total of 29,209. Next were Russian, 4,320; French, 4,010, and German, 2,951.

There is some eclectic reading, too, to be found among the world's five most translated authors in 1958. They are Lenin, Shakespeare, Jules Verne, Tolstoy and Dostoevsky in that order, with Gorky and Simenon as runners-up. The world's most translated single book, though, was the Bible.

Basic Facts and Figures—Unesco, Paris. Price: $3; 15/-(stg.); 10,50 NF.

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BANKS FOR EYESIGHT

by

David Gunston

To look into happiness through another man's eyes"—the phrase is Shakespeare's but today it can literally be true. For through the perfecting of corneal graft surgery, it is possible for a blind person to regain sight by having a small section of a recently deceased person's eye implanted in his own.

This quite wonderful operation, the culmination of a century and a half of experiment and research by workers in many countries, translates into reality a dream as old as man. It also gives to each and every one of us an opportunity unique in human history: that of giving sight to others. For through this operation, modern medical science has made it possible for anyone to bequeath this most precious gift to those who live after us and who are either blind or are in grave danger of becoming so.

No other generation has held so profound and precious a legacy in its keeping—yet the world-wide ignorance of this subject is appalling. In some small way, it is the purpose of this article to disseminate the up-to-date facts about corneal grafting and those unique organizations set up to obtain, store and provide usable eyes—the eye banks of the world.

At the outset it must be made clear that the implantation of another person's corneal tissue is not a magical cure-all for blindness. Many blind people have eye defects that are not confined to the cornea, so unfortunately this modern miracle cannot help them.

The cornea of the human eye is the transparent surface tissue of the eyeball, covering the iris and pupil. In normal sight, light is admitted through this transparent window. But if light cannot penetrate the central section of the cornea because of its clouding over or scarring, vision is impaired and may be completely lost.

Fortunately, however, the cornea is unique in that it is the only transparent and, so far as we know at present, the only truly transplantable tissue of the human body. Even grafted skin must come from the patient's own body. But corneal tissue from another person, if properly implanted, will knit into the surrounding eye tissue, grow, and eventually restore the patient's sight.

At present, between 60 per cent. and 90 per cent. of cases can be sure of improvement in their vision, or benefit by clearer or restored sight. Even if perfect eyesight cannot be guaranteed owing to previous damage to the eye by disease or injury, particularly burns, the improvement the operation can give ensures a person's independence of movement and activity.

The only inescapable conditions this operation demands are that the donated eye tissue must be healthy and sound, and it must be removed within a few hours of death, preserved if need be at a low temperature, and grafted within a limited period while the implanted corneal tissue is still living.

It was the British scientific investigator Erasmus Darwin who seems first to have felt that this daring operation might succeed. Writing in the period 1794-1796 he suggested: "Could not a small piece of the cornea be cut out with a kind of trephine about the size of a thick bristle, or a small crowquill, and would it not heal with a transparent scar?"

These early attempts were largely made with animal eyes: tissues from rabbits, dogs, sheep, pigs, even a gazelle, were implanted in humans, but although the graft "took", in each case the patients' corneas became opaque, so no improvement in vision resulted.

In the first half of the last century blindness due to disease and corneal ulceration was rife and surgical treatment became a highly desirable goal. But initial work was disappointing and furthermore was bedevilled by gross scepticism, both medical and lay, by high risk of infection, lack of anaesthetics and imperfect instruments and technique. Although a corneal transplant was first performed by Frans Reisinger in 1818, and a successful case achieved by Bigger in 1837, it was much later, about 1878-1888, before the operation could be accepted as being more than just a wild experiment.

In 1879, Wolfe discovered from his own successes that a freshly-removed human eye must be used, that the graft inserted must be highly accurately sectioned, and that the surrounding in the treated eye must not be damaged. In the same year, the French eye surgeon Louis de Wecher, addressing his fellow surgeons, declared:

We have no right in these cases to refuse the slightest aid to sufferers who have but this one remaining chance to recover a little sight; neither should we be deterred by the reproach of eccentricity which will certainly be levelled at anyone who attempts to graft a cornea.

But the greatest pioneering figure in this work was the German ophthalmologist Arthur von Hippel. From 1878 onwards he had done corneal grafting in both man and animals, and in 1886-1887 publicly showed at Heidelberg a patient on whom he had done a successful animal graft, keeping accurate records of this case for two years.

In 1888 von Hippel achieved the first completely successful corneal transplantation from one human eye to another, though he continued to experiment with animal tissue, chiefly from rabbits. Above all, he devised an accurate clockwork trephine for cutting the graft tissue before insertion into the patient's cornea, and under the growing influence of Lister and Pasteur devised

CONT'D NEXT PAGE

THERE IS NO SUCH THING AS A 'WORN-OUT' EYE

surgical principles and technique that still govern this operation today.

In 1905 a Moravian surgeon named Zirm achieved fame for skilfully saving the sight of a man blinded by a lime splash by implanting tissue from a young boy's eye that had to be removed for medical reasons. He followed the man's improving vision over a long period. Since then, the art of keratoplasty, as it is known scientifically, has been greatly developed by the unstinting work of eye specialists in many countries, notably Elschnig and Fuchs, in Germany; Morax, who used graft tissue from a patient's other eye for the first time in 1912; Vladimir Filatov in Russia from 1922 onwards, who showed the value of eyes removed from a corpse; the French surgeons Paufique, Sourdille and Offret; Castraviegio and Paton in the U.S.A. since 1939; Franschetti, in Switzerland; and the British surgeons Tudor Thomas and Sir Benjamin Rycroft.

What exactly is involved in such an operation to restore or repair a person's sight, and how does the eye bank come into the story?

THE remarkable thing is that provided the eye tissue used for grafting is itself healthy and free of scarring, it matters not what the age, state of health, effectiveness of vision or cause of death of the donor are. The corneas of elderly people are actually better for the purpose than those of young children, and even if a person had poor sight or wore glasses, his or her tissue after death may prove to be the means whereby someone else is saved from blindness or near-blindness. In this context, there is no such thing as a "worn-out eye": it is the surface corneal tissue, not the lens, that is used.

The important thing is that the eye or eyes be removed from the body as soon as possible after death, ideally within two hours, and with an outside limit of perhaps ten hours. This naturally causes difficulty, but is essential if any subsequent grafting operation is to succeed. The removal of the eyes, their enucleation, can be easily undertaken by any doctor, and, it should be stressed, causes no mutilation or visible disfigurement of a loved one's body. The length of time fresh eyes are in fact kept in storage in an eye bank is relatively of less importance than the immediacy of their enucleation.

This is probably the single greatest problem in corneal surgery: relatives are naturally loth to grant permission so soon after decease, and post-mortem permission may all too frequently arrive too late. The complete eye is removed, and usually placed on a gauze pad in a small glass jar of paraffin oil, the inertia of which protects the soft, unsupported tissue. It is then usually sent swiftly to an eye bank in a watertight copper container embedded inside a metal ice box.

On arrival at the eye bank an eye is immersed for an hour in an antibiotic solution to ensure complete sterility, and bacterial cultures are always taken on arrival at the eye bank and again 48 hours before use to ensure that no infection is introduced into the patient's open eye.

Ideally, eye tissue is used very soon after enucleation, as may sometimes be possible in an eye hospital, or when wanted for a patient who has himself supplied the tissue from a useless eye to save the sight of the other, called an autograft. But in practice, donated corneal material must be brought to wherever it is required.

The problem of effective storage of the living eye tissue from someone now dead has received much attention, and is an aspect still being widely researched upon. Several methods are currently used. For short-term storage, up to about four days, the eye is simply kept at 4° C. in an ordinary hospital refrigerator after its antibiotic immersion. This method is ideal in a busy hospital where grafting is regularly carried out. For longer storage, the donated eye is kept in liquid paraffin at the same low temperature, treated with one or more antibiotics and sometimes nourished with dextrose to feed the tissue during storage.

For even longer storage periods, that is more than about three weeks, other methods are currently being investigated, notably the slow freezing of the eye in glycerol immersed in a vial in carbon dioxide "snow" at the extremely low temperature of minus 79° C. Another method, preferred in the U.S.A., is to dehydrate the cornea and store it in nitrogen gas. When reconstituted, the tissue is as good as new.

In practice, however, the description eye bank is often something of a misnomer, since all available graft material is used just as soon as it can be obtained. The waiting list for corneal operations is frequently far longer than the expected supply of donor eyes. Nevertheless, there must often be storage, particularly in large countries where great distances between surgeon, donor and patient are involved.

The operation itself is a marvellous example of ophthalmic surgical skill. Since 1945 the techniques and instruments used have been greatly improved and now contribute a strange and striking beauty to this unique human feat. All cases are of course most carefully selected, and waiting lists are often longer than is generally imagined: in the U.S.A., for example, it was recently estimated that upwards of 30,000 people could be assisted if more donated eyes (and more skilled eye surgeons) were available.

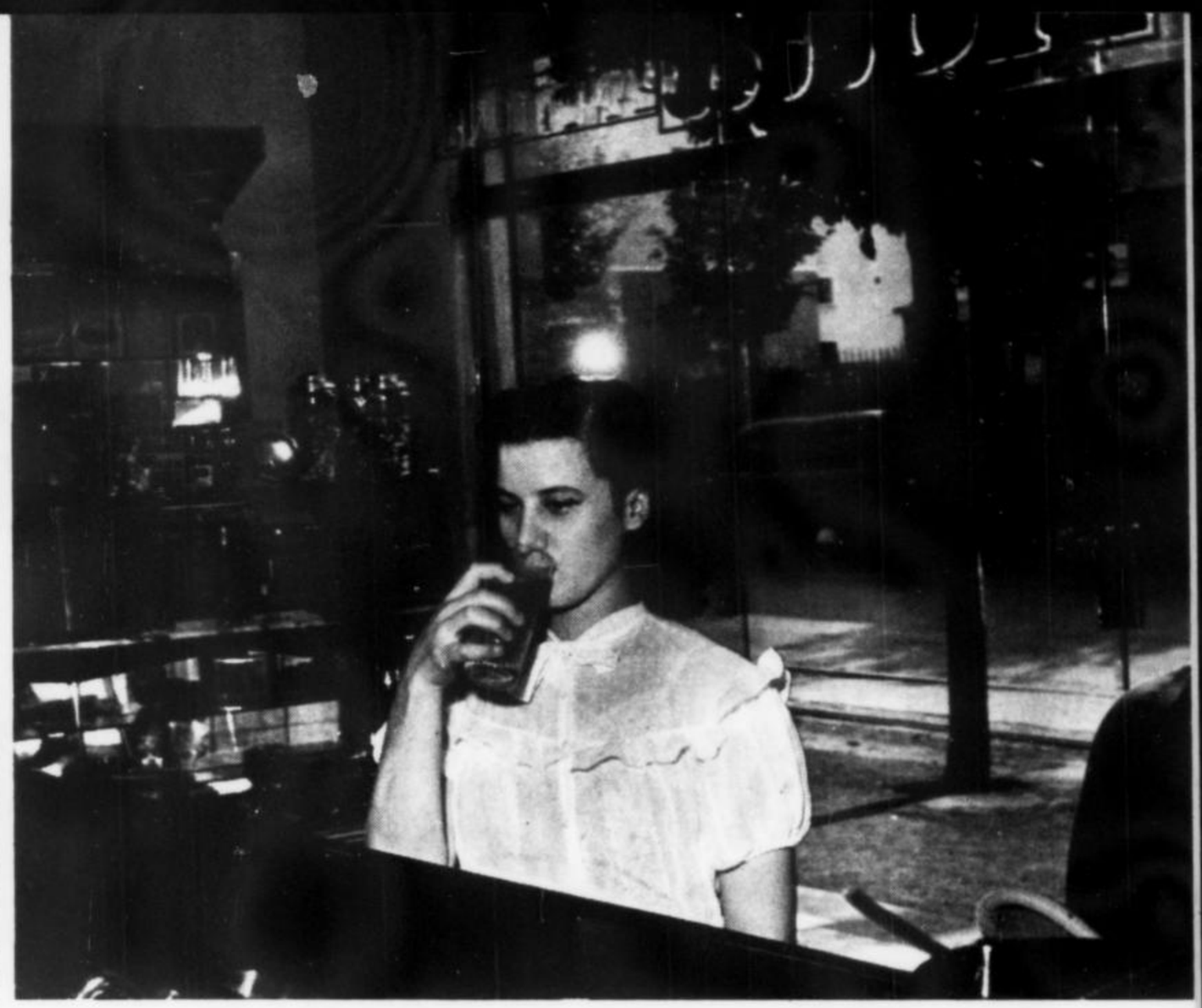
A patient spends between a fortnight and a month in hospital. The pupil is contracted with drugs, and drops of a local anaesthetic are inserted into the eye at brief intervals throughout the operation. Basically, a circular concave section of the opaque cornea is cut away with the sharp trephine, which is then used to cut out a disc, or graft, of fresh tissue from a donor eye of exactly the same size. With infinite care, this tiny section is lifted with delicate forceps, placed in position, and painstakingly secured with about eight minute sutures of fine braided silk or monofilament, stitched with a specially designed needle just 4 mm. in length.

The trephine, still based on von Hippel's invention of 1880, can be adjusted at various depths to cut grafts of any thickness as demanded by the diseased or injured eye. The renovated eye is then treated with atropine and covered for several days. The stitches are removed in 18-20 days, and although the graft tends to bulge outwards a little at first, it gradually flattens out naturally within six months, and, miraculously, becomes part of the patient's living body.

Above all, he or she finds that sight is improved or even

Amabile Battistello, seventeen-year-old girl of Cusano Milanino, Italy, has partially recovered her sight thanks to the eyes of the Rev. Don Carlo Gnocchi who, before dying in Milan some time ago, willed his eyes to a blind girl. Amabile was chosen as the recipient of the Rev. Gnocchi's legacy. The operation was carried out successfully and today, her sight partially, restored, the young Italian girl has begun to live the normal life of a teen-ager. Her benefactor, who achieved recognition as sponsor of Italy's war-stricken youngsters, has joined an ever increasing number of men and women throughout the world who have willed their eyes to eye banks in their communities to provide restored or improved sight for those who are blind or suffer from defective eyesight.

Photos © Atlantic Press



restored where before there was only darkness. In many countries there are records of people whose vision was limited perhaps to a a vague appreciation of movement to whom the corneal grafting operation has given normal vision for both distance and reading, even with the difficult full-thickness graft. And the implanted tissue becomes as clear and even as a normal healthy cornea.

No wonder one lady declared in a poetic burst of astonished realization: "Through eyes made whole by mine, I'll see." Her sentiments when she realized that her own eyes may well help someone else to see after her death were well expressed—but unfortunately are by no means universal. If they were, the immense task of keratoplasty surgeons and eye bank directors the world over would be greatly eased.

The eye bank organization is a recent idea much hampered by apathy, ignorance and legal and religious obstacles. Many otherwise enlightened people object to eyes being removed after death, while many countries cling to outdated legal restrictions more suited to the days of body-snatching. For example, some national laws specify a 24-hour waiting period before any tissue can be removed from the dead, which destroys the potential value of the eyes.

The world's leading eye bank, and the first to be established, is The Eye Bank for Sight Restoration, set up by a few interested doctors in 1944 at the Manhattan Eye, Ear and Throat Hospital, at 210, East 64th Street, New York 21, U.S.A., as a non-profit-making organization. Now, with a long list of outstanding successes behind it, with 16 affiliated eye banks throughout the United States, it offers to the rest of the world a wonderful example not only in the storage and allocation of donor eyes, but in their swift supply to where the need is greatest (by air, if need be), and in the special training of eye surgeons.

It also runs a weekly clinic for corneal sufferers and maintains a unique research laboratory wherein the study of donated eye tissue (often after providing a successful graft) plays a big part in furthering mankind's knowledge of its optical equipment. Operating at much more than a local community level, this eye bank is a major enterprise, backed by the most careful organization.

In 1948, profiting by a 1947 decree removing the 24-hour limitation on eye removal, *La Banque Française des Yeux,* now at 21, rue François-1er, Paris (8^{e}), France, was founded, chiefly through the combined efforts of ophthalmologists, veterans' groups and associations for the blind. It now works assiduously on a broad programme, is backed by local or regional eye banks throughout France, and is well supported both officially and voluntarily. This major European development was followed in 1950 by the setting up of the *Banco Nacional de Ojos,* at the Hospital Provincial in Madrid, after legislative authorization, and this eye bank now maintains a national programme throughout Spain.

In 1952, thanks to a realistic educational campaign, the Corneal Grafting Act was passed in Great Britain without opposition, and eyes can now be removed promptly after death if relatives have no objection, while anyone may bequeath his eyes for this purpose without specific legal deposition. A number of eye banks are in operation in regional areas as well as in London, and much research work goes on, notably at the Queen Victoria Hospital at East Grinstead in Sussex, under Sir Benjamin Rycroft.

Indeed, U.S.A., France, Spain, Britain and Syria have led the way in furthering this noble work by removing legal and other hindrances to using fresh eyes from the recently dead. But other countries are not so fortunate. Italy, for example, needs clearer laws on this matter, and the legal requirements vary in Germany, where eye bank planning is well behind other nations.

The law is insufficiently specific in Canada, Greece, Peru and Brazil, while in Venezuela difficulties arise with relatives. Morocco has one eye bank and Mohammedan spokesmen have helped in allaying religious fears. No real legal obstacles exist in Austria or Switzerland, while Denmark and Norway are in the happy position of having very little eye disease and so the demand for eyes is small. Yet Finland has a condition not considered necessary in say Holland, and the legal procedure in Sweden is very different from that in Czechoslovakia. Surgeons in Egypt still have to fight ancient prejudices, but the greatest need of all is in India, where a vast need is met by two small eye banks only, one in Madras and one in Aligarh.

Clearly, there is much need for uniformity of legislation controlling the removal of eyes, but the problem goes deeper than that. The real need is for an Eye Crusade, since helpful legislation or even tacit agreement about the securing of fresh graft material cannot make much headway without popular education designed to achieve universal enlightenment.

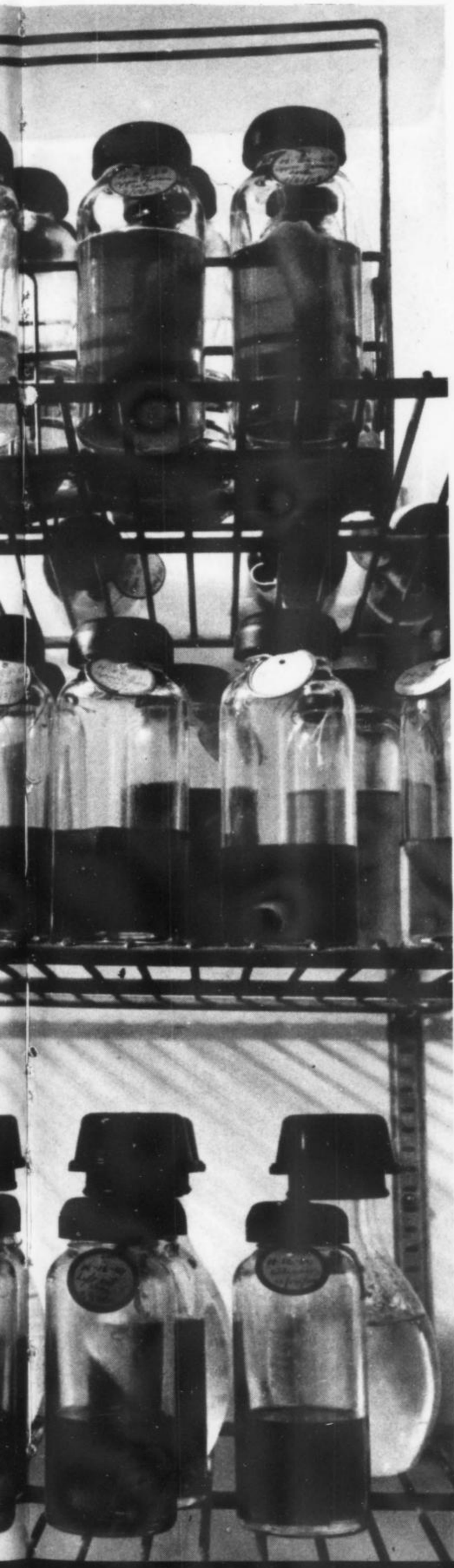
All too often today the skill and power of this branch of eye surgery is balked by apathy, prejudice and conflict. France, Great Britain, the U.S.A. and one or two other countries already apply simple systems whereby a person's witnessed signature on a card or form is sufficient to ensure that his or her eyes will be used after death, but of course many more eye banks (and with them, many more surgeons) are needed everywhere.

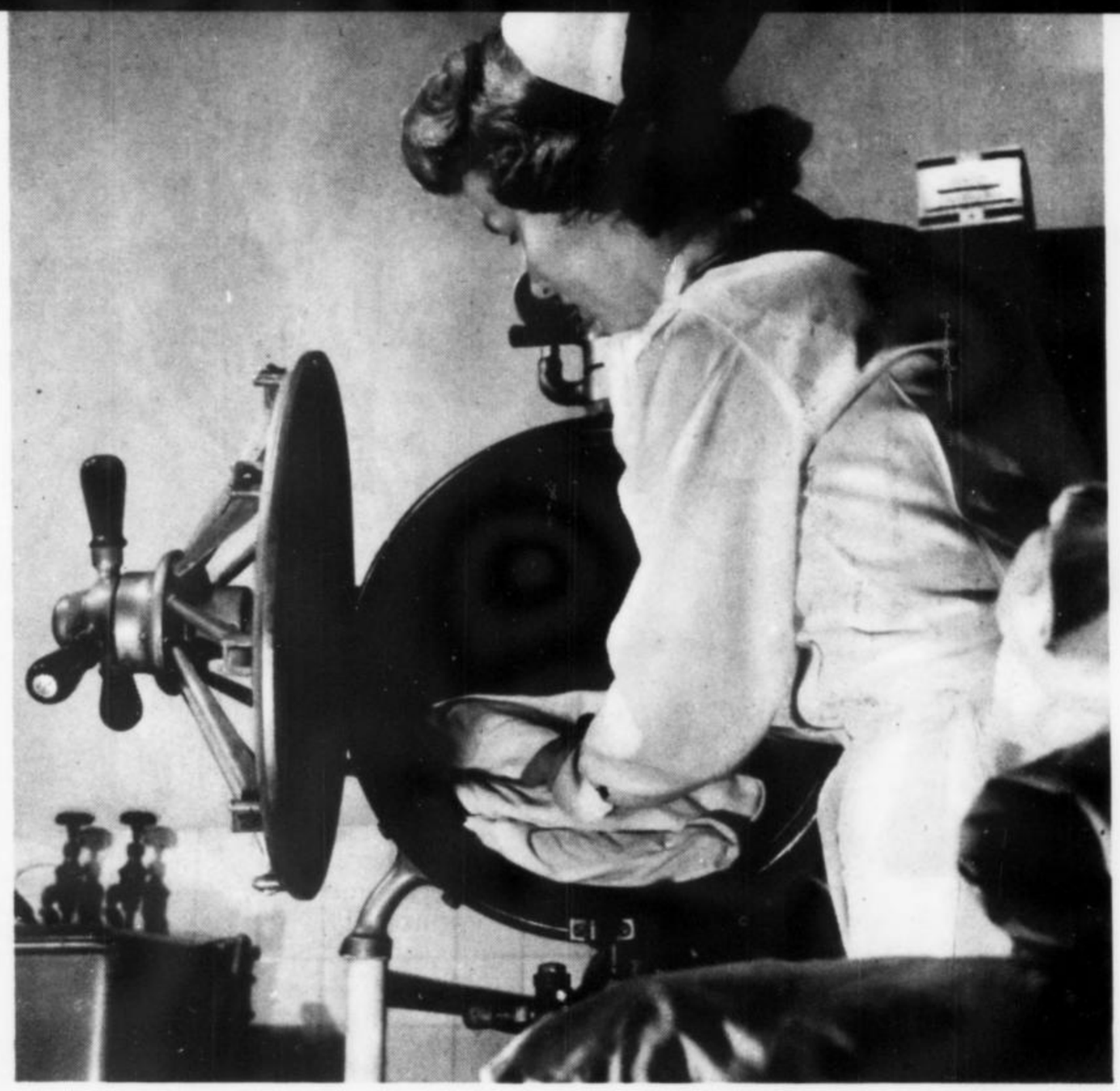
No one who has seen the human tragedy caused solely by corneal opacity and the great joy brought to many patients by a graft of this kind can doubt the need—or the urgency.

BLOOD VESSELS IN BO

Blood banks, eye banks (see page 15) and bone banks have given the world new ways of combating the age-old plagues of man—disease and disability. The latest "bank" provided by modern science is the Blood Vessel Bank established at the New York Hospital, New York City. In certain operations the surgeon is impeded by blood vessels which have ceased to function normally and which must be sacrificed to ensure a successful operation. Experiments have proved that sections of arteries and other blood vessels can successfully be inserted to replace malfunctioning ones. This led to the establishment of a bank in which grafts from donors are kept in a large double door refrigerator (right). The bank sends the blood vessels as they are required to other hospitals. The nurse above is withdrawing an aorta from the bank which will be sent to its destination in a special refrigerated container. Two or more hours at room temperature would damage the graft. Donor grafts must be preserved in a special solution of buffered salt to which human serum and antibiotics are added. The technician below weighs one of the several salts employed in making this special solution.

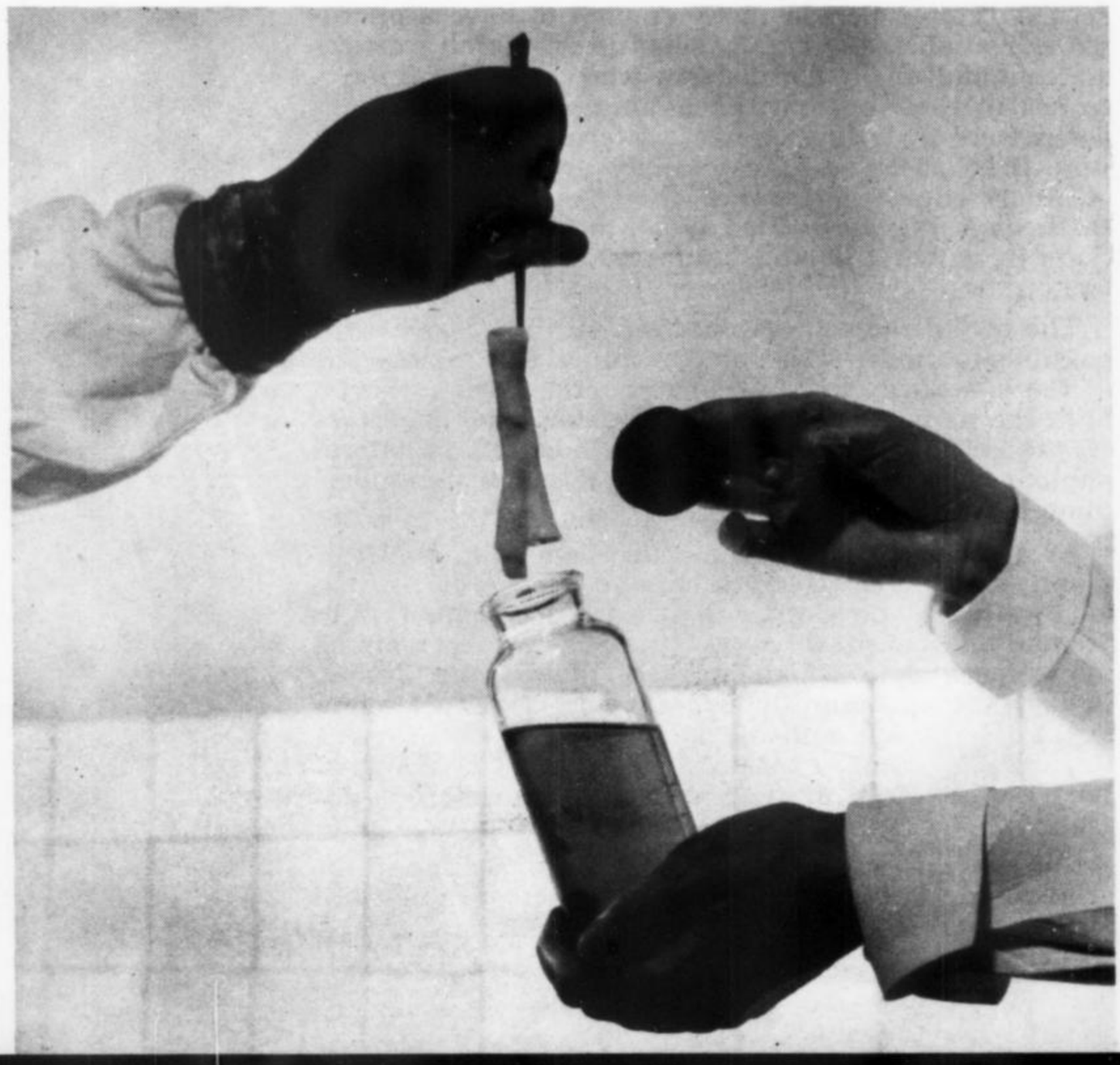
BOTTLES





Because donor grafts must be brought to the bank swiftly, sugeons, technicians and nurses on duty all hours must be prepared to move out on short notice both to take grafts from donors (recently deceased people in good health so far as the vascular system is concerned) and to deliver grafts to surgeons requiring them for operation. The sterilized equipment and instruments including two complete surgical kits fill two large suitcases. All instruments and equipment are sterilized in the bank's own autoclave (above) and are packed and ready to go at a moment's notice. The actual removal of the graft like the one below is done in as sterile a manner as possible under operating room conditions. The graft immediately goes into the prepared solution and is later kept under observation to ensure that it is not diseased. It will be good from four to six weeks.

All photos © Geor E. Pickow, New-York



MICROPHOTOGRAPHY REVEALS

THE INVISIBLE WORLD

by Daniel Behrman

A world of phantasmagorical shapes, breath-taking beauty, nightmarish monsters, surrealist dreams, certain mortality, apparently-eternal immortality, baroque fantasy, abstract starkness, utter chaos, perfect order... this is a world as remote from our own as any undiscovered planet beyond the edge of the solar system and yet seldom any further away than our fingertips. This is the invisible world, entered not through Alice's looking-glass, but through the microscope.

Men have been exploring it since the invention of the microscope three-and-a-half centuries ago. It has revealed to them countless secrets which have contained the answers to riddles of life and death. When the biologist aims the barrel of his lens upon a deadly organism or the chemist focuses upon a mysterious crystal, he is usually hunting the answer to one of these specific riddles. And yet, there are moments when the imperative demands of science or technology are suddenly overshadowed by a vision of harmony or horror. Moments like these are seldom forgotten by anyone who has experienced them, even though they may have no immediate bearing on the progress of science.

Not so very long ago, this hidden world could be seen only by a person lucky enough to have a microscope available—that is, by scientific research workers and a handful of enthusiasts who installed microscopes in their parlours at a time when their neighbours were installing magic lanterns. Patient observers, it is true, had painstakingly produced drawings of microscopic images but they could not hope to catch anything more than two-dimensional cross-sections in which the added dimension of emotion was lacking.

The eye of the camera changed all this. Now it was possible to capture the image under the microscope in the same way as any image of the normal world. Still, it was no easy task. The cumbersome ancestors of present-day cameras could be adapted to microphotography only with the help of equally cumbersome optical apparatus.

As a science and as an aid to science, microphotography made a relatively early appearance, but it had to await the development of modern cameras to become an art... if we accept that definition of art as the superfluous which makes life worth living. Today, a good 35-millimetre camera, a simple adaptor, a microscope and a stand to keep the camera steady (for some exposures may last as long as 100 seconds) are all that is needed for microphotography.

Not quite all, though. Perhaps the most important prerequisite is that elusive quality of inspiration and

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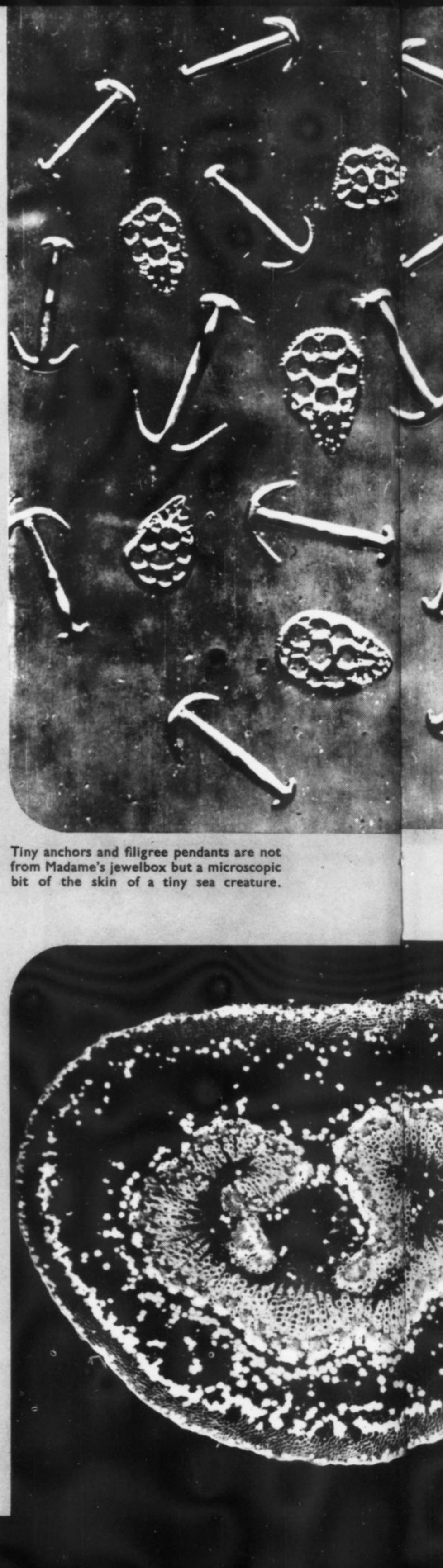
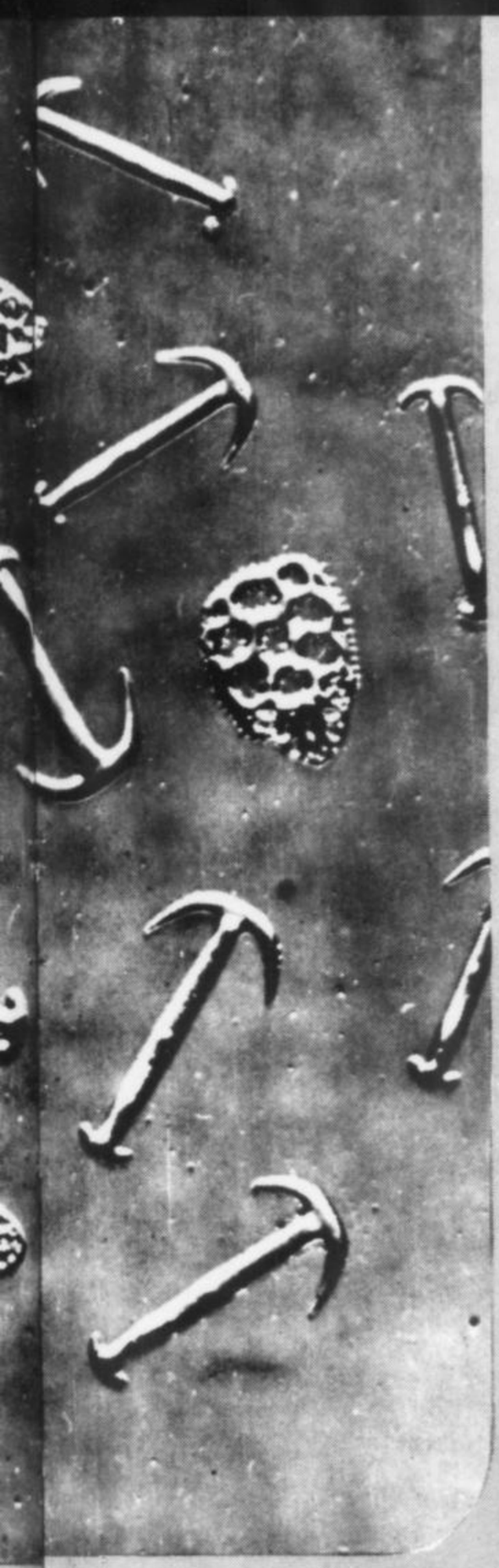


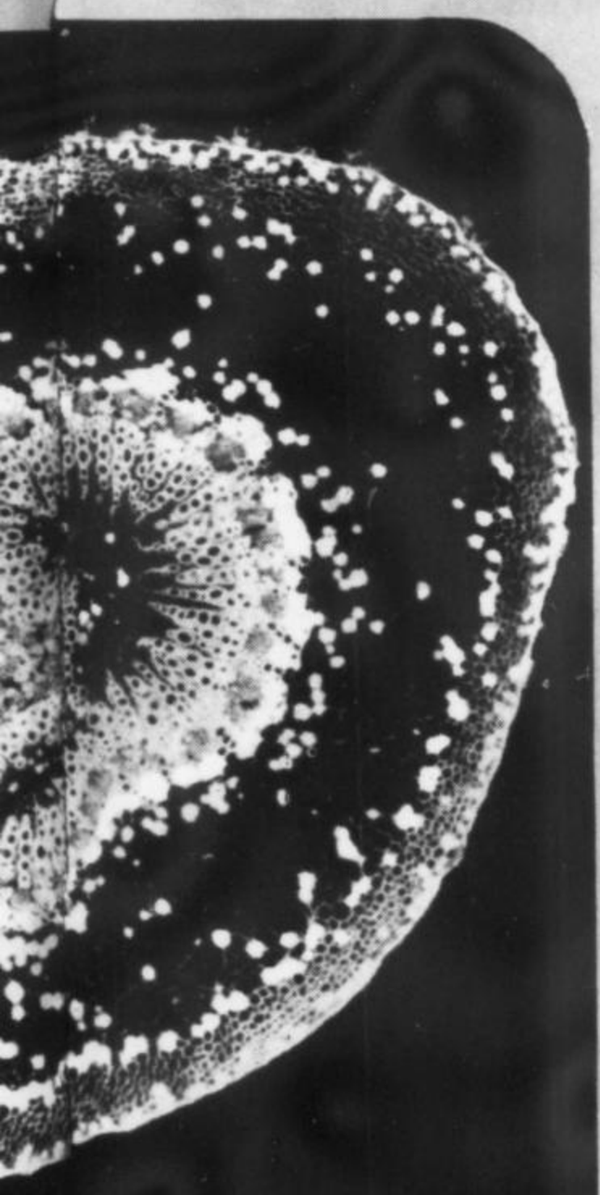
Tiny anchors and filigree pendants are not from Madame's jewelbox but a microscopic bit of the skin of a tiny sea creature.



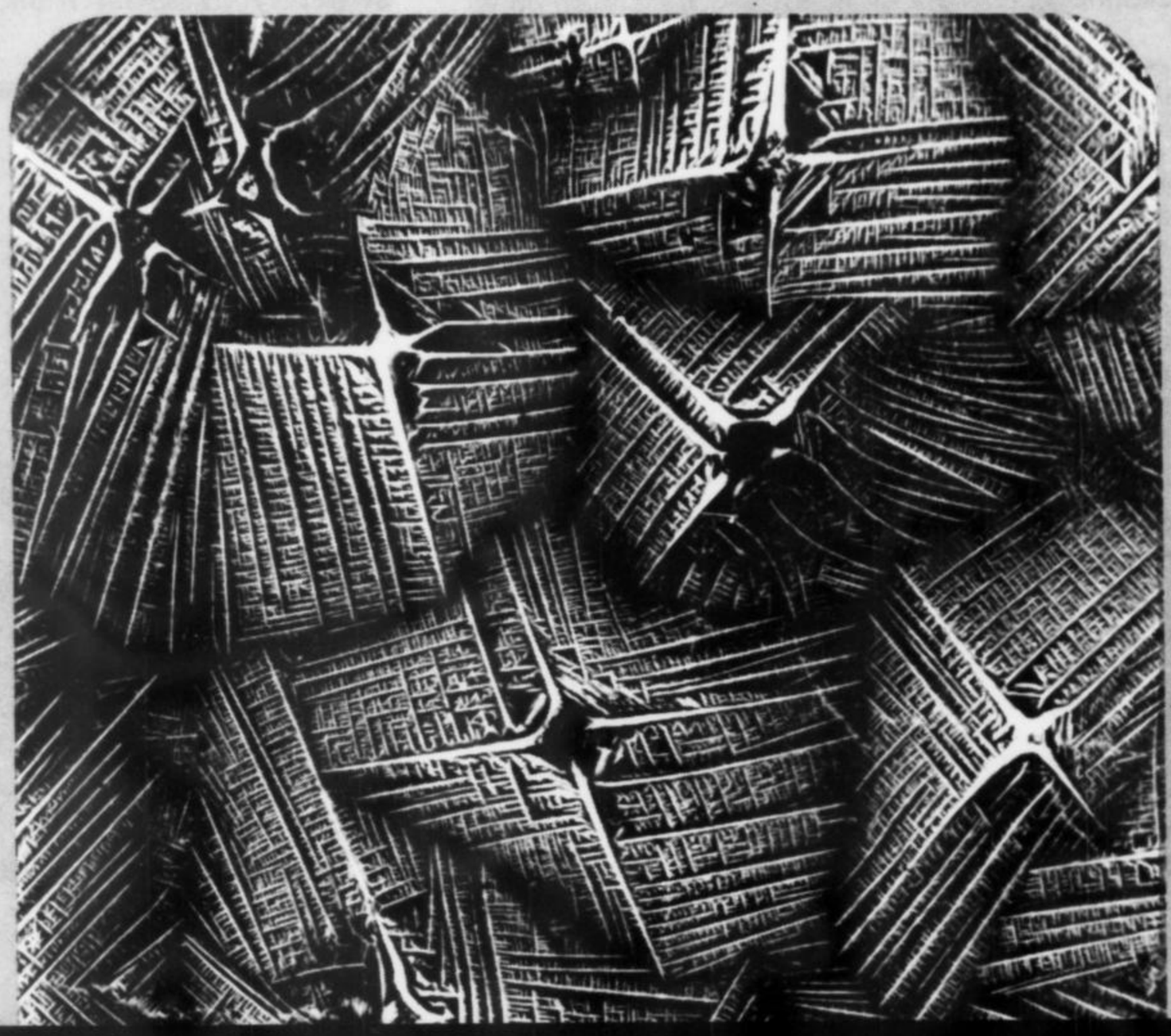
This exquisite doily of sheerest lace is only a section of a common chestnut tree stem.

Feathery reeds in a floral arrangement are the microscopic crystals of salicylic acid.

Photos © Louis-Jacques Laporte, Paris



It might be a wasp's nest, or some strange fabric—actually these are bay salt crystals.



FIFTY THOUSAND MICROSCOPE SLIDES

imagination which can distinguish what is beautiful or unusual in one microscopic image out of a thousand others. And, of course, the thousand other images are needed, too.

There are no less than 50,000 of them in the laboratory of Dr. Louis-Jacques Laporte in Paris, on one of those quiet residential streets in the Passy district where nothing ever seems to happen. Dr. Laporte is the leading supplier of microscopic slides for science teaching in French universities and lycées, an occupation which keeps him busy seventy-two hours a week in this age when educators are discovering "audio-visual teaching aids", one of the fields in which UNESCO is working. It certainly keeps him too busy to wonder what the reactions of the groceries-laden housewives hurrying past his ground-floor quarters would be if they knew that, only a few feet away, all the afflictions of man from cancer to the plague were in storage (harmlessly, of course) on glass slides.

Even if they entered his laboratory, as we did the other day, they probably would not be very enlightened. It is one of the last citadels of the lone experimenter in this era of air-conditioned assembly lines, functioning to the rhythm of piped-in music selected by psychologists.

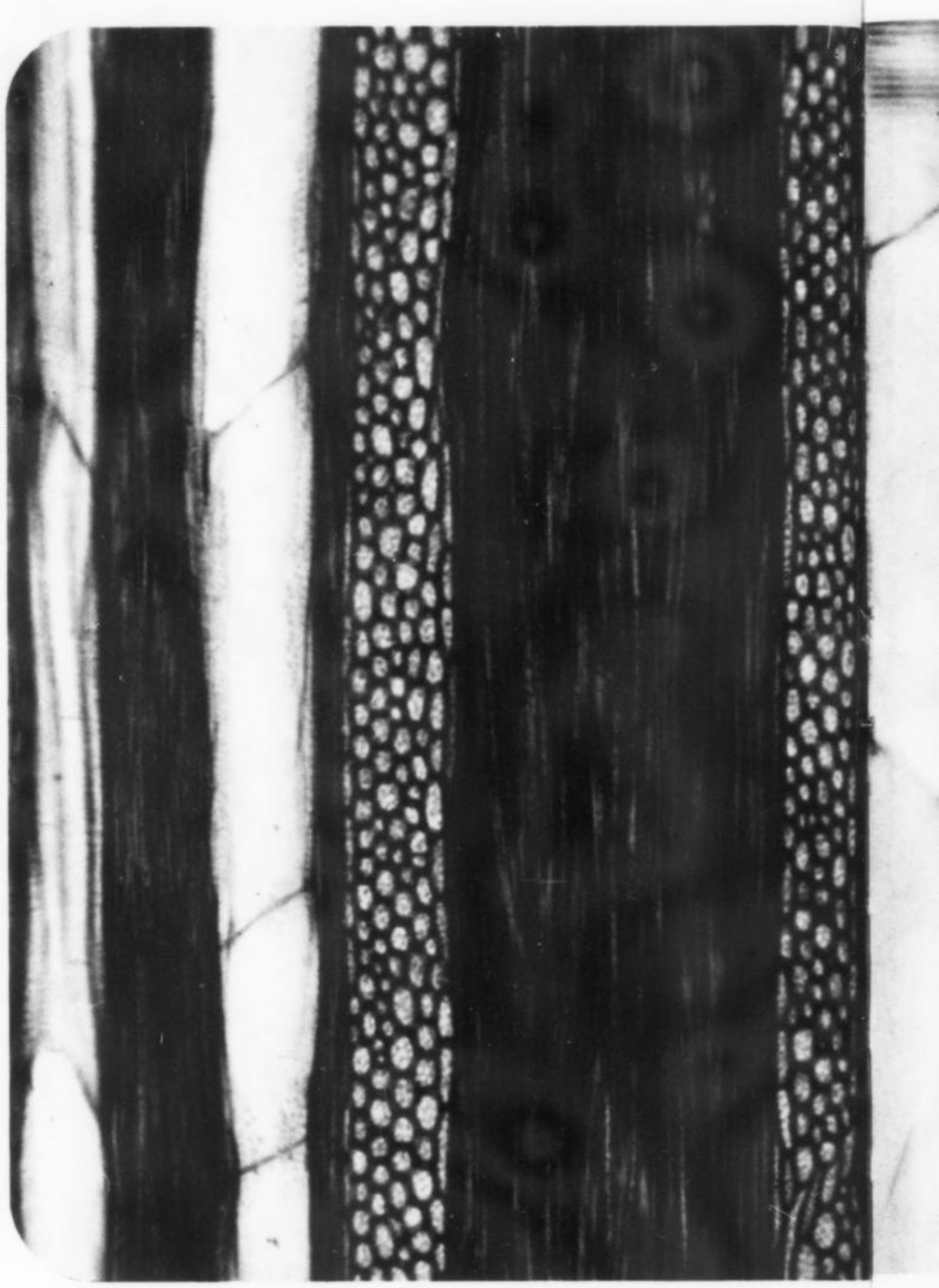
The Laporte laboratory, housing one of the world's specialists in the new science of microphotography, might well serve as a stage setting for a play by Courteline, the turn-of-the-century French dramatist who delighted in satirizing the bureaucracy of his day. All the props are there: roll-top desk, a huge table covered with scarred linoleum and assorted flasks, bottles and papers, a gas radiator which has a habit of turning itself on and off with disconcerting pops, and files, files, files climbing the walls to the ceiling.

Over this citadel reigns Dr. Laporte, a mild, distinguished-looking man who wears the discreet rosette of the French Legion of Honour in his lapel. Adjoining this office is another room containing the simple stand used for microphotography, hundreds of photographs and more files filled with microscopic slides.

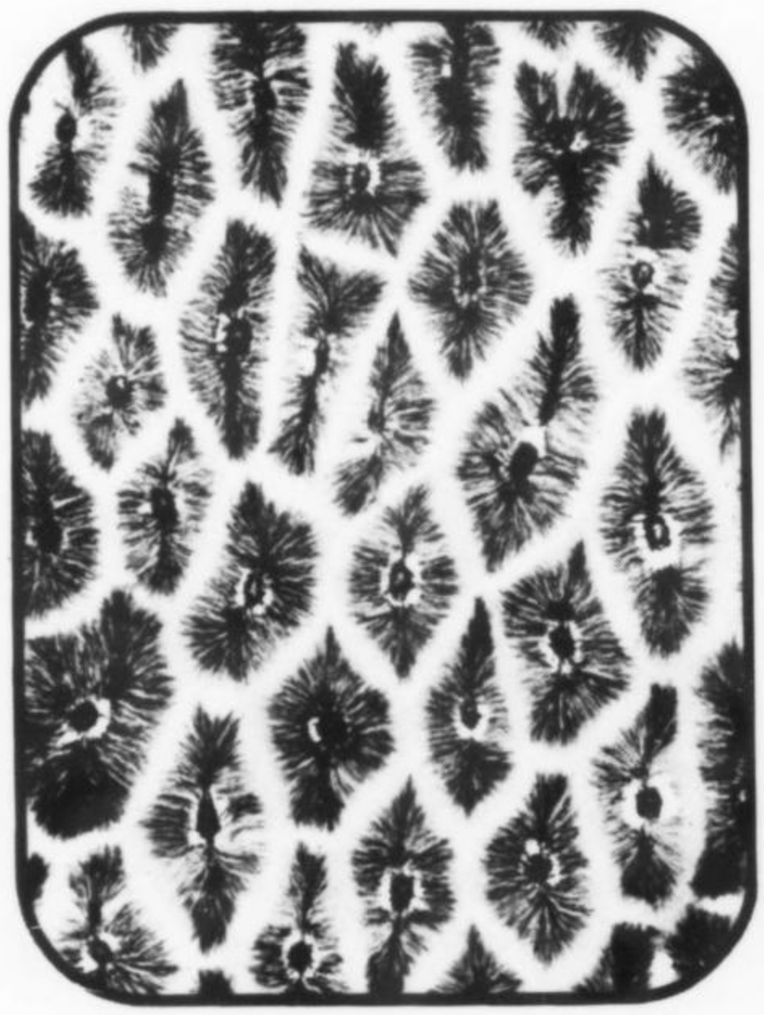
There is also a kitchen, converted into a warehouse, whose contents include a few boxes of carefully labelled sacks of earth from Barbados, brought back after an expedition two years ago in search of new specimens of diatoma, the fossilized algae which are a delight to the eye of the microphotographer and anyone else fortunate enough to see them.

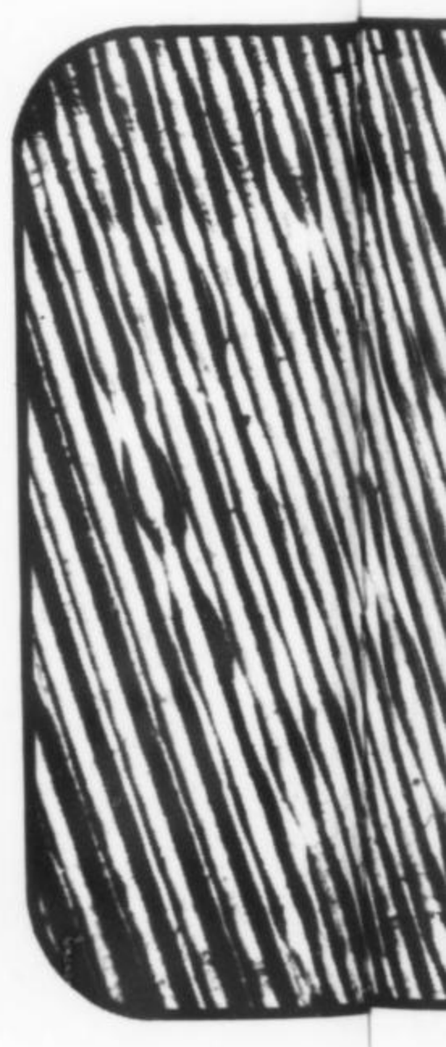
Dr. Laporte is a rather rare specimen himself—he comes quite close to that 18th century notion of a "universal man". He is not only a scientist and a photographer, but he also happens to be a singer (he is president of one of Paris's leading choral societies), a writer and a painter. True, he hasn't done very much painting since he sold sketches of the Luxembourg Gardens in the Latin Quarter to help pay his way through the Sorbonne, but he has been writing all his life. Among his books are "The Invisible World", "What You Should Know about the Microscopic World", a collection of poems entitled "Souls and Landscapes"... and a detective story.

Yet it might be said that all of his talents—even a musician's sense of harmony—met in one of his most recent works, "Panorama of the Micro-World". Here, as he explained to us in his laboratory, art took precedence over science. Its 300-odd illustrations from his own collection of micro-photographs and other equally rich collections are a gallery of portraits,



The curious baubles, below left, would enhance a Christmas tree, but a microscopic one. The pattern is the tooth of a sea fish. In centre photo below the design is simply a minute area of the surface of an ordinary gramophone record. The abstraction, (below right)





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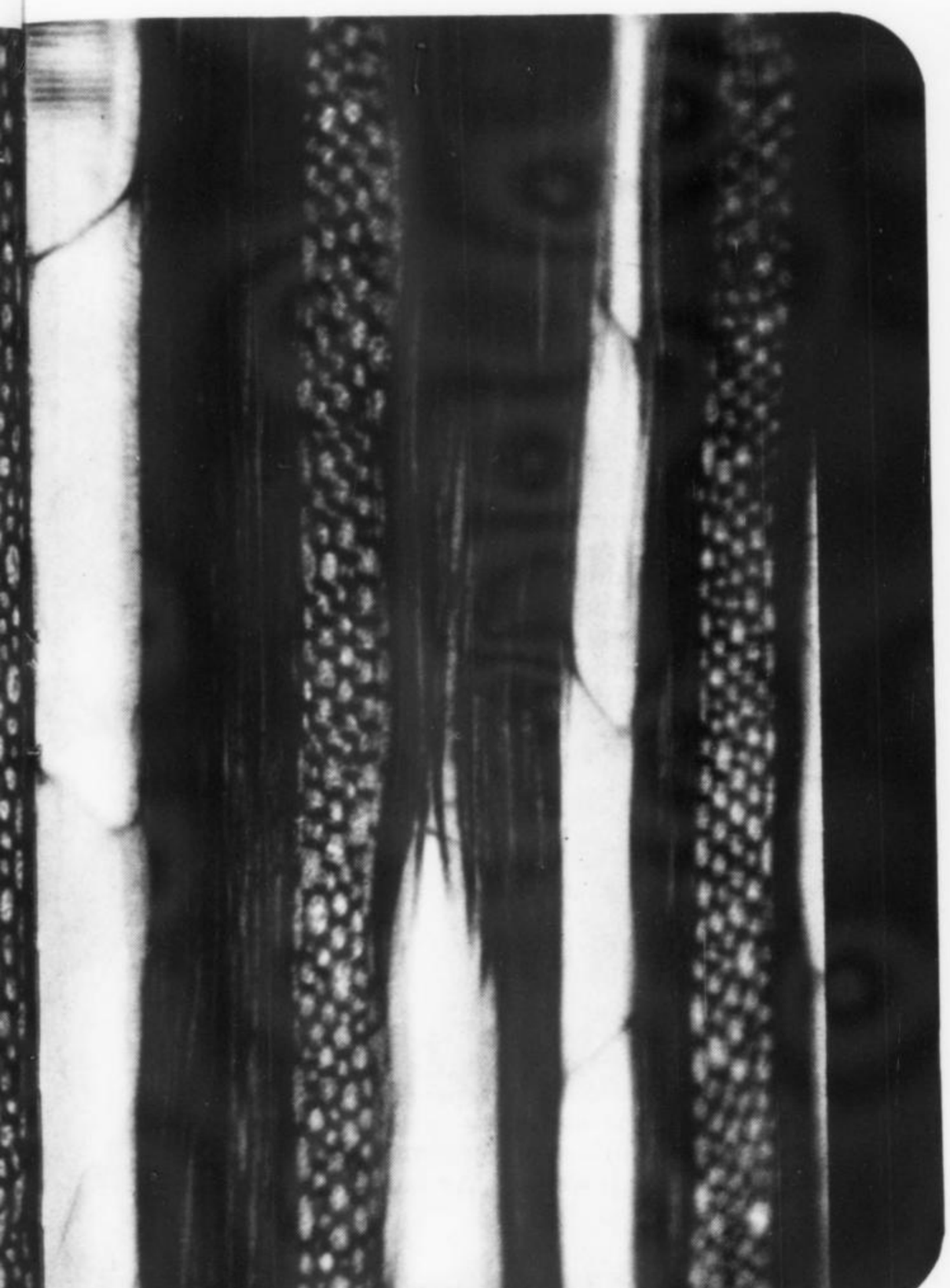
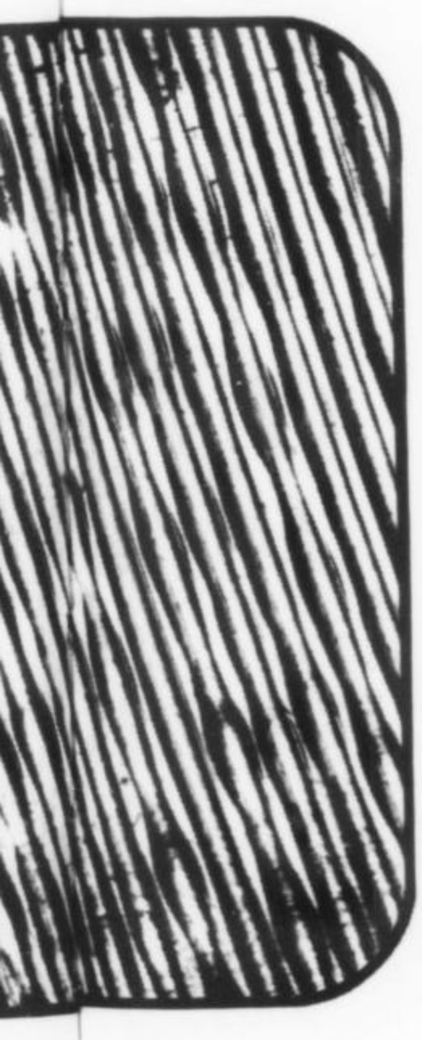
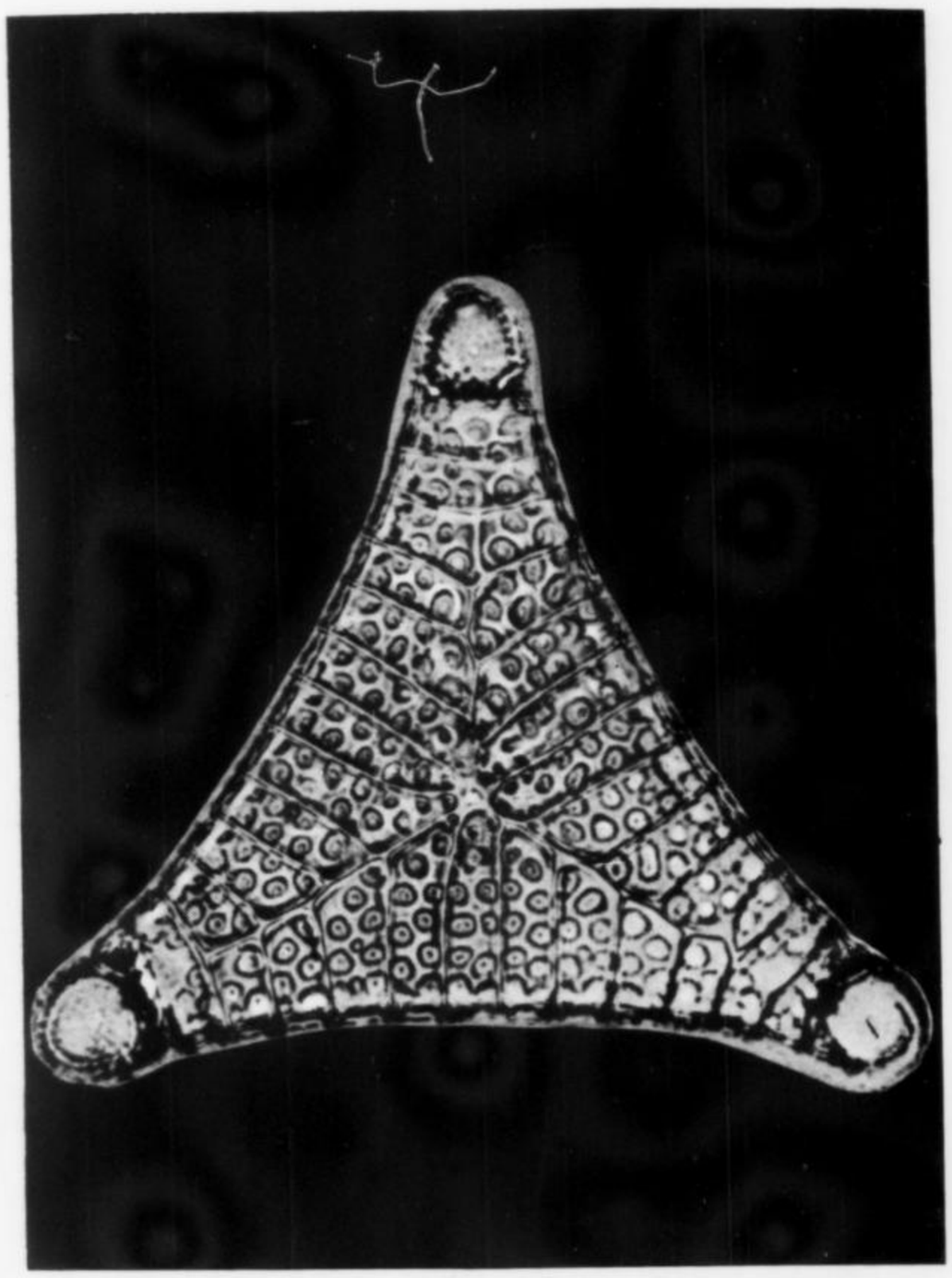


would be right at home in a collection of modern drawings—but you'd need a microscope to see it. It is an arrangement of body scales from a hawk-moth. Above, a cross-section of a vine tendril running with sap shows, under the microscope, a great variety of intricate layers.



Photos © Louis-Jacques Laporte, Paris



It could be a brooch of precious stones as seen here magnified 1,860 times. In reality it is a secreted valve from a Madagascar diatom cell.

Microphotography discovers an unusual plaid fabric design in this section of a striped muscle of a sea insect larva magnified 1,340 times.

GALLERY OF NON-FIGURATIVE ART

landscapes, vignettes and non-figurative compositions visible to the naked eye only because they have been magnified anywhere up to 40,000 times (a ratio which can be achieved with the electron microscope).

As we browsed through the "Panorama of the Micro-World" in his laboratory, Dr. Laporte determinedly went to work on his morning's mail, interrupted occasionally by the doorbell announcing students who needed slides for an experiment or a thesis.

"Look at this letter," he remarked, "I only get about one a year like this nowadays." It was from a French priest in Le Havre who wanted a "Diatoma Rose-Window" with some very stern specifications: "What is important to me is the beauty of the slide. You know that I am very demanding. You have my entire confidence."

Dr. Laporte sighed. "There you have a vanishing race—the diatom collector," he remarked. This species of collector is interested either in individual specimens or else in unbelievably-complicated compositions in which pearl-like diatoma are used to decorate floral bouquets composed of butterfly scales. A surface of 5 square millimetres is usually enough for a picture.

This is the way Dr. Laporte has described a diatom collector in his "Panorama of the Micro-World": "His penchant is revealed the day he sees for the first time under the microscope the stained-glass window design of a *Lepidodiscus elegans* and his delight never ceases after that. When he is making observations, he forgets his dinner time and he consents to get some sleep only when dawn comes to brighten the windows of his study.

"If he hears of a species which lives only in the tropics and he does not possess it, then he can love nothing else. He moves heaven and earth to obtain it and, if it were not for the obligations tying him to his country, his family and his modest office job, you would see him steal it or sail off to seek it. For it is missing from his collection and he has set aside a place for it in his box, as the philatelist does for stamps in his album. This empty space hurts his eyes and he will not be able to live until it has been filled."

And here is the happiest day in the life of a diatomist: "In his collection, he has an extremely rare diatom which can be gathered only on a certain small island lost in the Indian Ocean and found on maps only as a nameless speck. And this island, he has just learned, has been swallowed up forever in an earthquake; the sea has engulfed its beach and its rocks, its mangroves, its population—and (he thinks) its diatoma. He gazes with renewed love upon the unique specimen he possesses. His heart brims with happiness..."

Among microscopophiles and micro-photographers, the diatomist is in an extreme class by himself. He not only wants to explore the micro-world; he wants to change it to suit his own tastes. In a less acute and more widespread form, his viewpoint is reflected in those who see parallels between the world under their lenses and the world around them. Magnified 21 times, a cross-section of a bramble stem becomes the head of a grinning cat. Three caterpillar hairs (magnified seventy-five times) reproduce the sophisticated brushwork of a Japanese artist. The cross-section of a sea-urchin's spike (magnified 300 times) could inspire many a jeweller. As common an object

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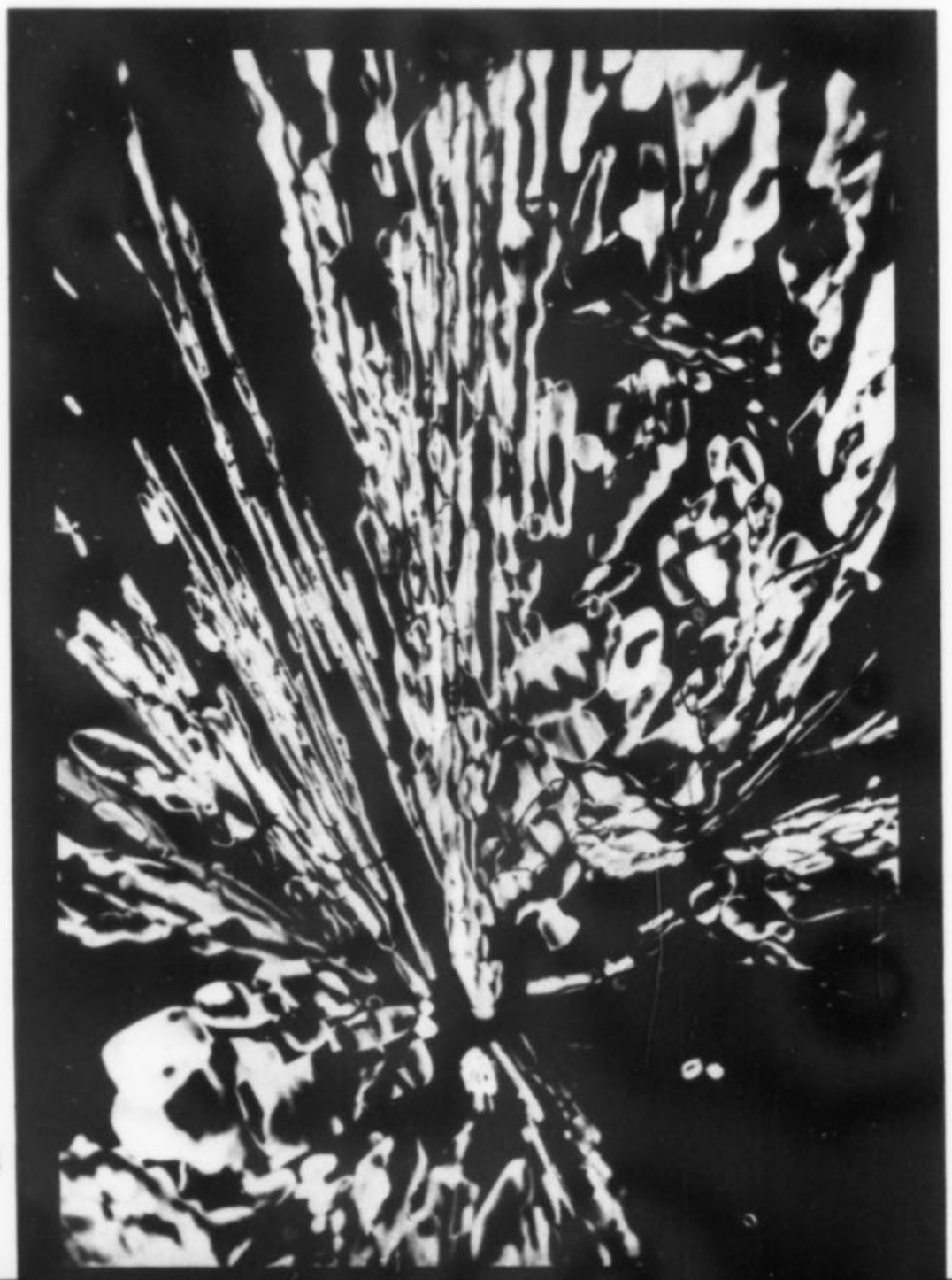
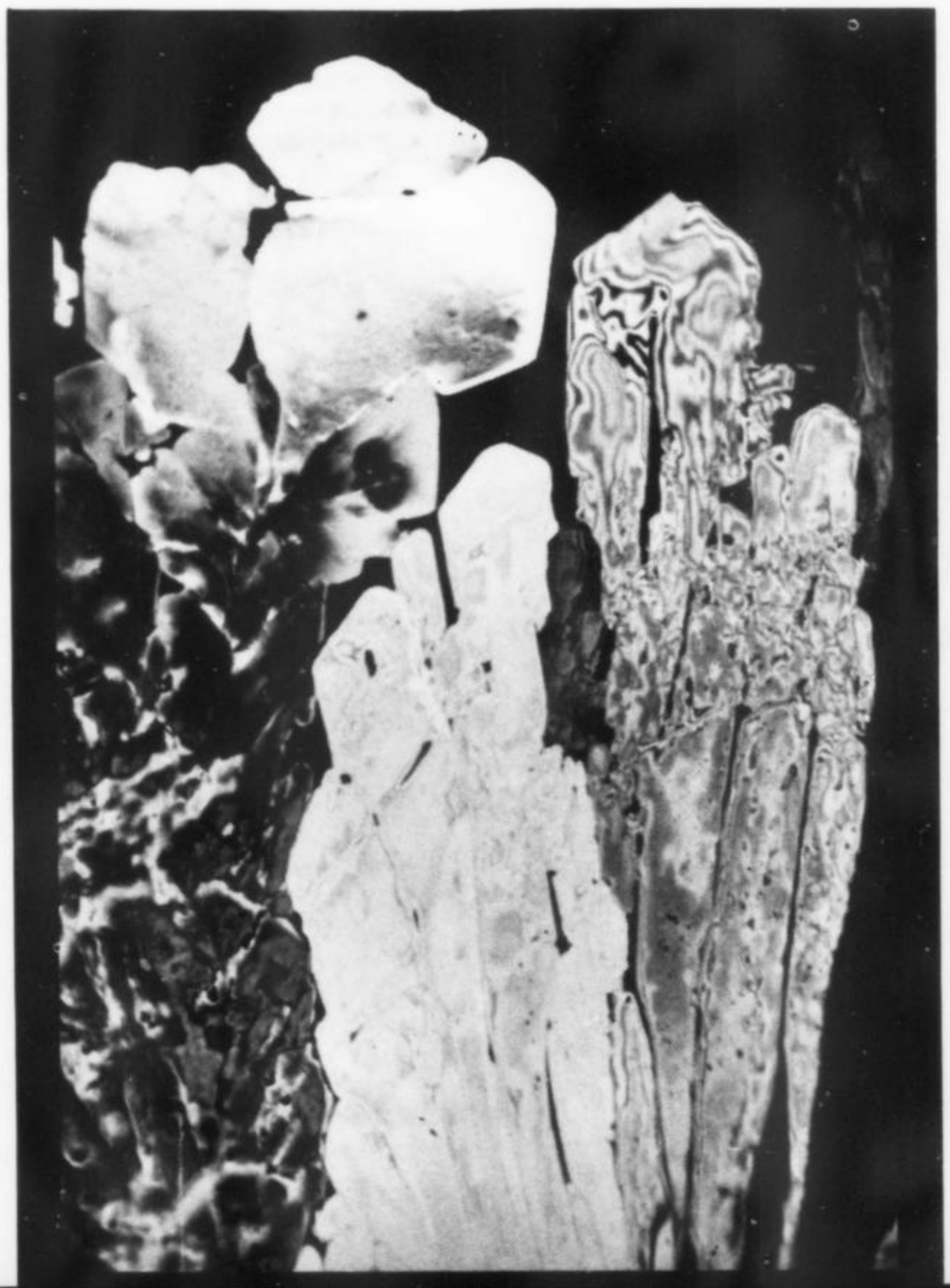
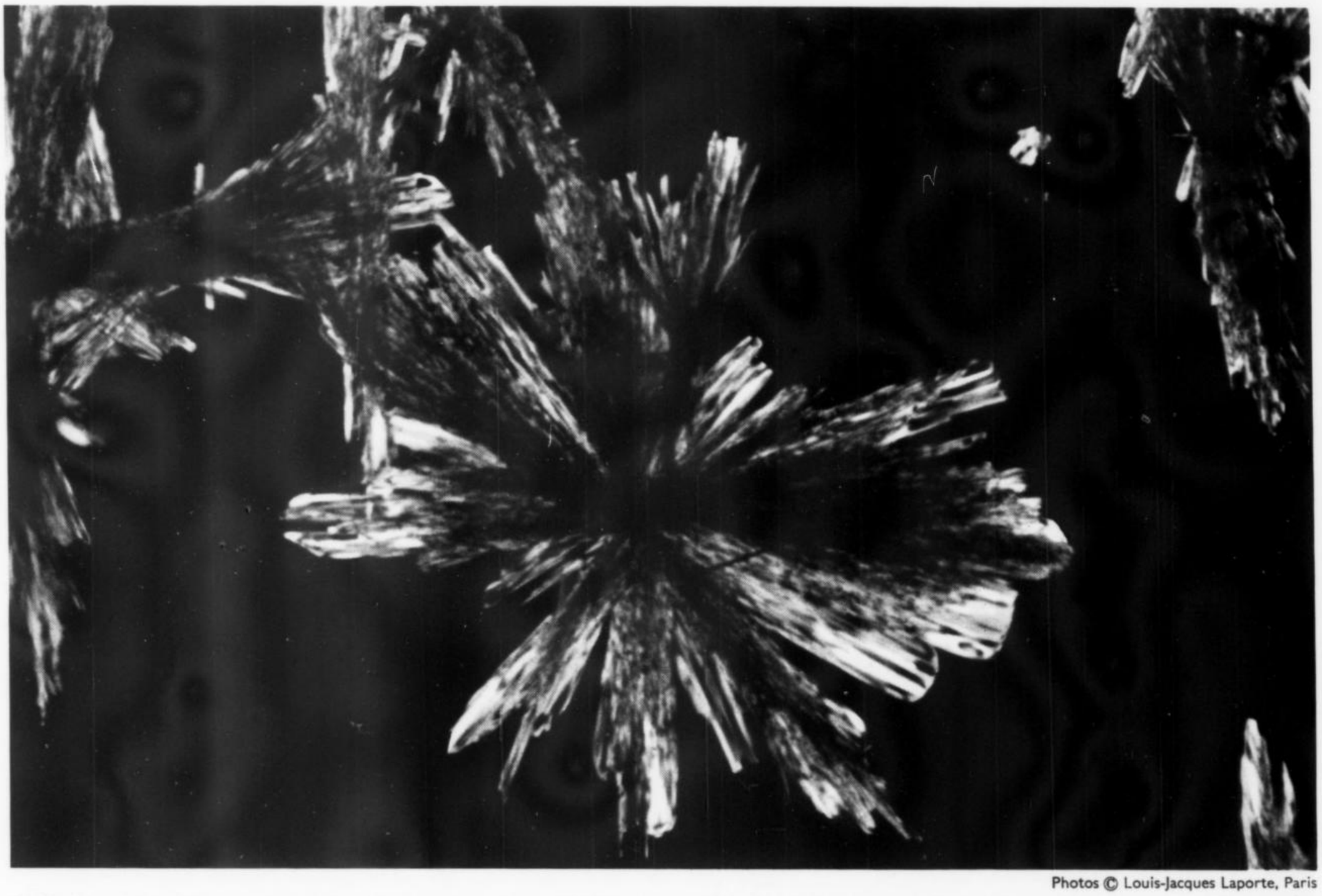
Crystallization of common and uncommon chemical bodies produces some of the most beautiful of all photographs taken through the microscope.



So striking are some of them that even modern artists have been known to use them as inspiration for their abstractions. Those pictured below

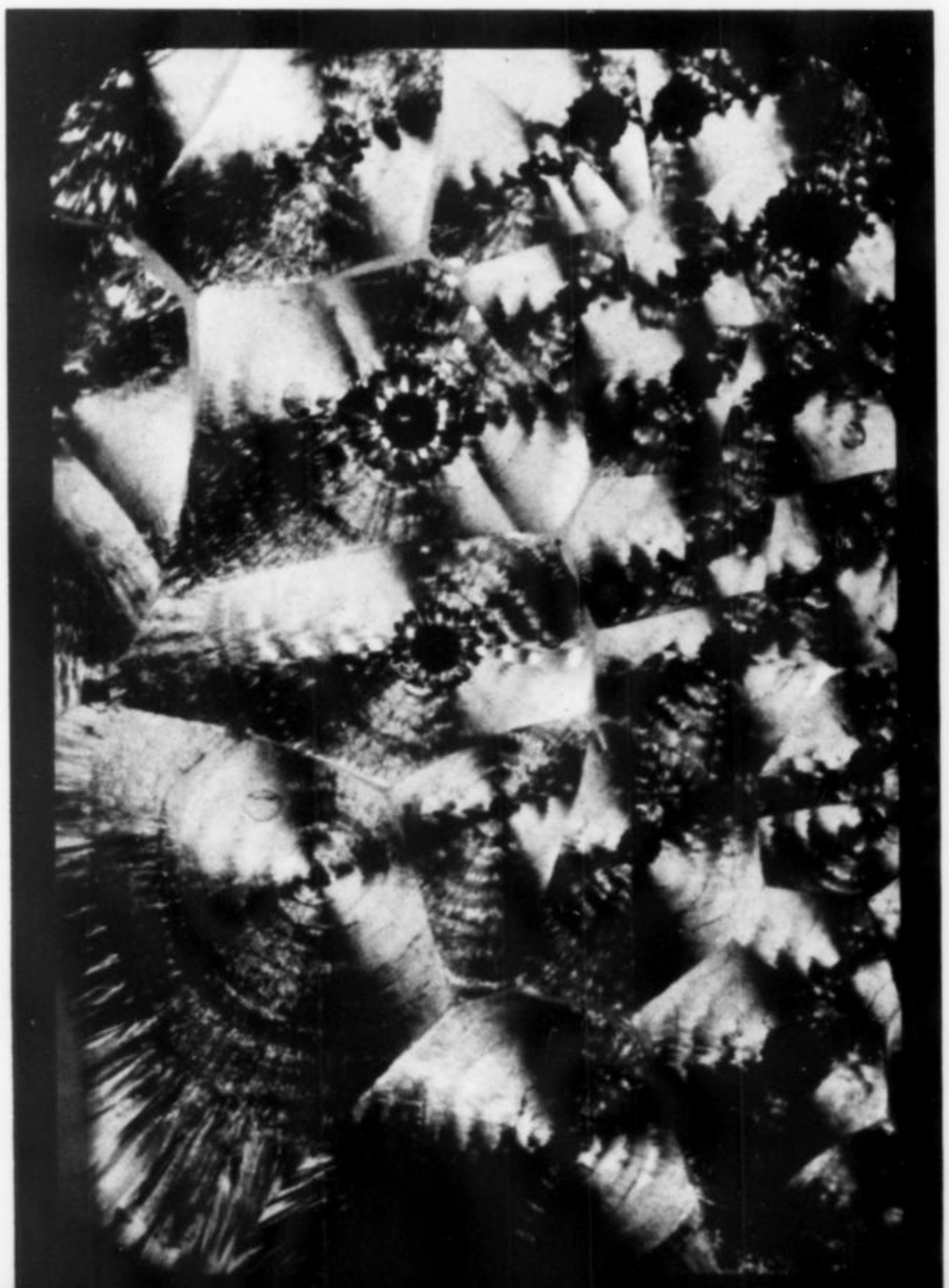




Photos © Louis-Jacques Laporte, Paris

Coffee-lovers claim this ingredient keeps them awake at night. Under the microscope however, a crystal of caffeine appears more beautiful than harmful.

from left to right show, in the first two photos, crystals of a deadly poison (chlorohydrate of pilocarpine) used in the manufacture of certain eye-washes. The third is crystallization of common soda, and the last which looks like a butterfly's wing is the crystallization of vegetable asparagine.



A UNIVERSE REVEALED BEHIND A LENS

as a nylon stocking takes on a mysterious pattern of endless links when magnified 45 times. There is even a micro-painter, René Ferter, in Dr. Laporte's "Panorama" who has created landscapes inspired by the microscope: for example, the crystallization of tartaric acid is the basis for a landscape, "The Tall Palissades," showing a walled city perched on a rocky spur.

As you might imagine, insects take on new dimensions under the microscope. Microphotography explains many of their amazing feats. Blown up 100 times, for example, an ant's head shows jaws as cruelly efficient and functional as a pair of wire-cutters. Many of the tools which man has taken thousands of years to devise, ranging from the drill to the bulldozer, have always existed in the insect world. Some of them even resemble the marvellous electronic tools which we are just devising. A photo of the antennae (magnified 125 times) of a small scarab could easily be mistaken for one of the sensitive space probes mounted on the shells of artificial satellites.

Up until now, Dr. Laporte had been talking to us mainly about the giants of the micro-world. His panorama changes completely, however, when it takes in organisms which have to be magnified hundreds of times before they become visible to the naked eye. Then all the landmarks of the normal world disappear and you are plunged into a new universe living under laws of its own.

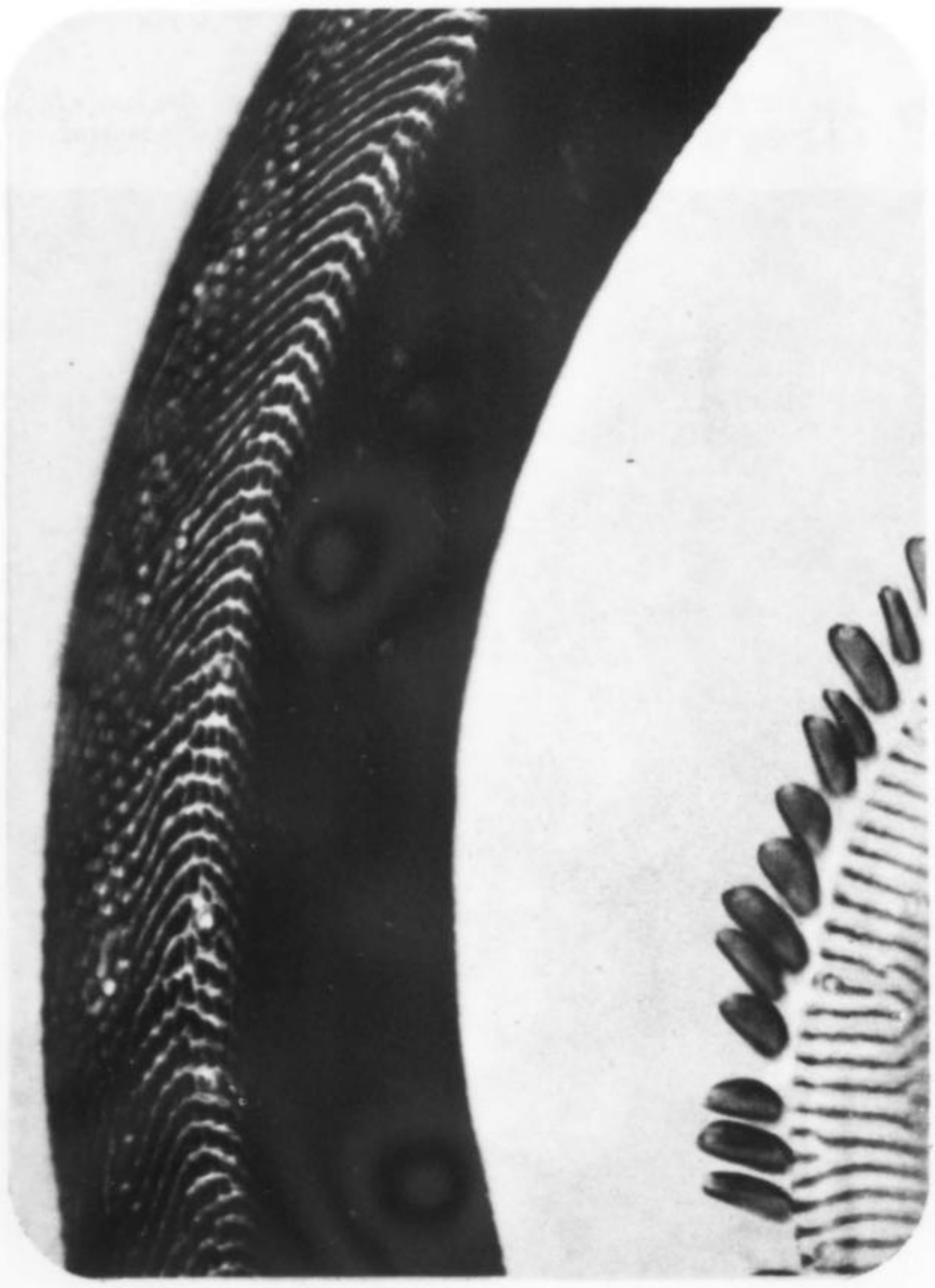
Take the paramecium, for example, a roughly oblong mass with a fringe of delicate hairs which are actually the "oars" with which it rows along. Magnified 860 times, the microphotograph can show the paramecium reproducing by division if it is sufficiently nourished, or else, when food runs low, joining with another to form one—but never dying. Here, as Dr. Laporte told us, is a world with immortality.

Parasites and bacilli which are among man's deadliest enemies also appear in this world. Some are far more horrible than the diseases they cause (we certainly would not advise looking at a spotted, flaccid liver fluke, for example, before lunch). Others are quite innocuous in appearance. Magnified 3,080 times, Koch's bacilli are nothing but little stems meaning nothing except to the experienced eye of the physician who knows the signs of tuberculosis.

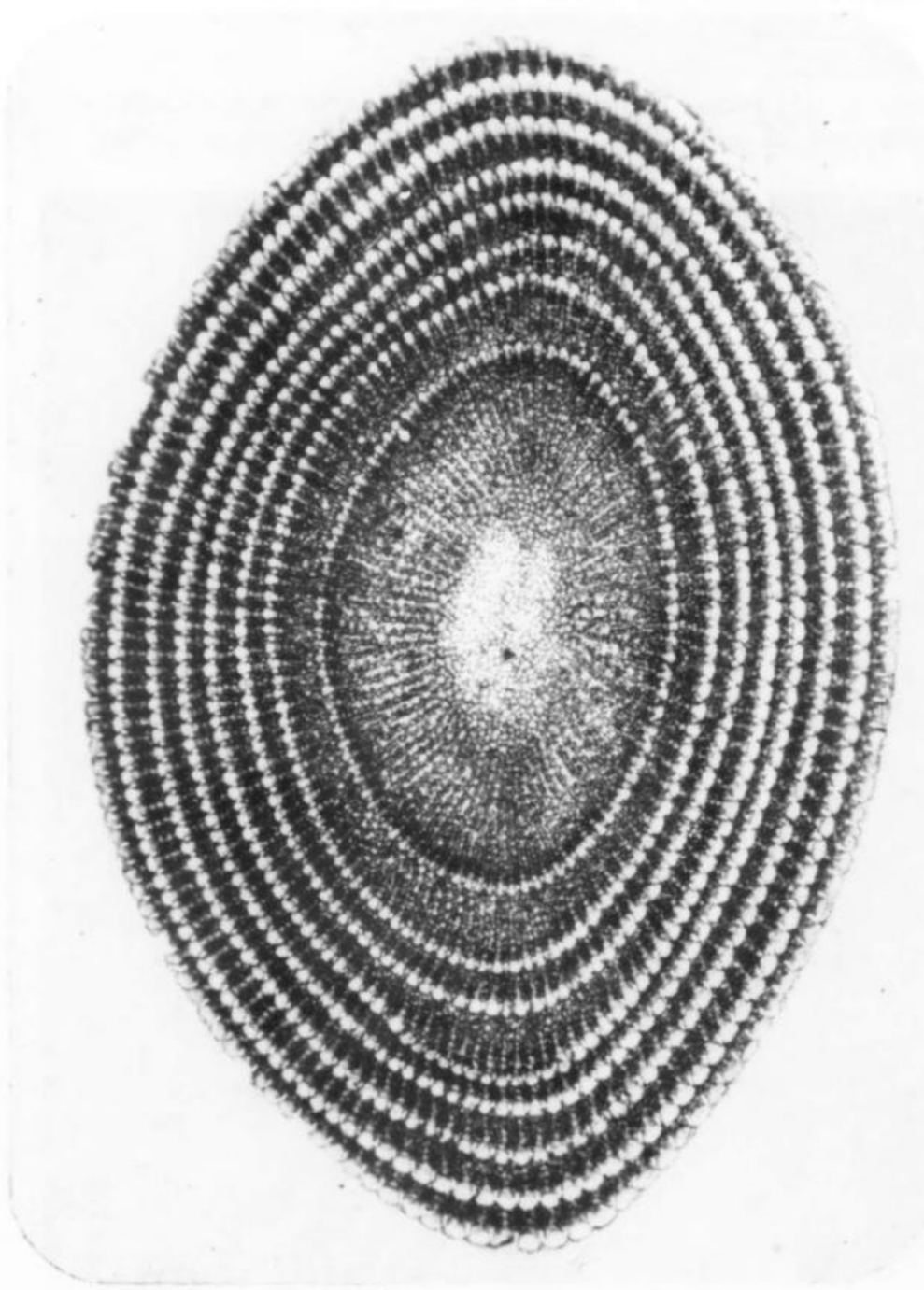
The great strides which have been made by public health in recent years have complicated the task of Dr. Laporte. "It's almost impossible to furnish slides to medical students of certain diseases, which have been virtually wiped out," he commented.

The doorbell in the musty old office housing these micro-marvels was now beginning to ring more insistently. Dr. Laporte, with a trace of regret, closed the covers of his "panorama" and returned to his everyday profession. He had not covered the subject by any stretch of imagination and it is unlikely that it will ever be covered. Why not? The answer lies in the conclusion he wrote to his book:

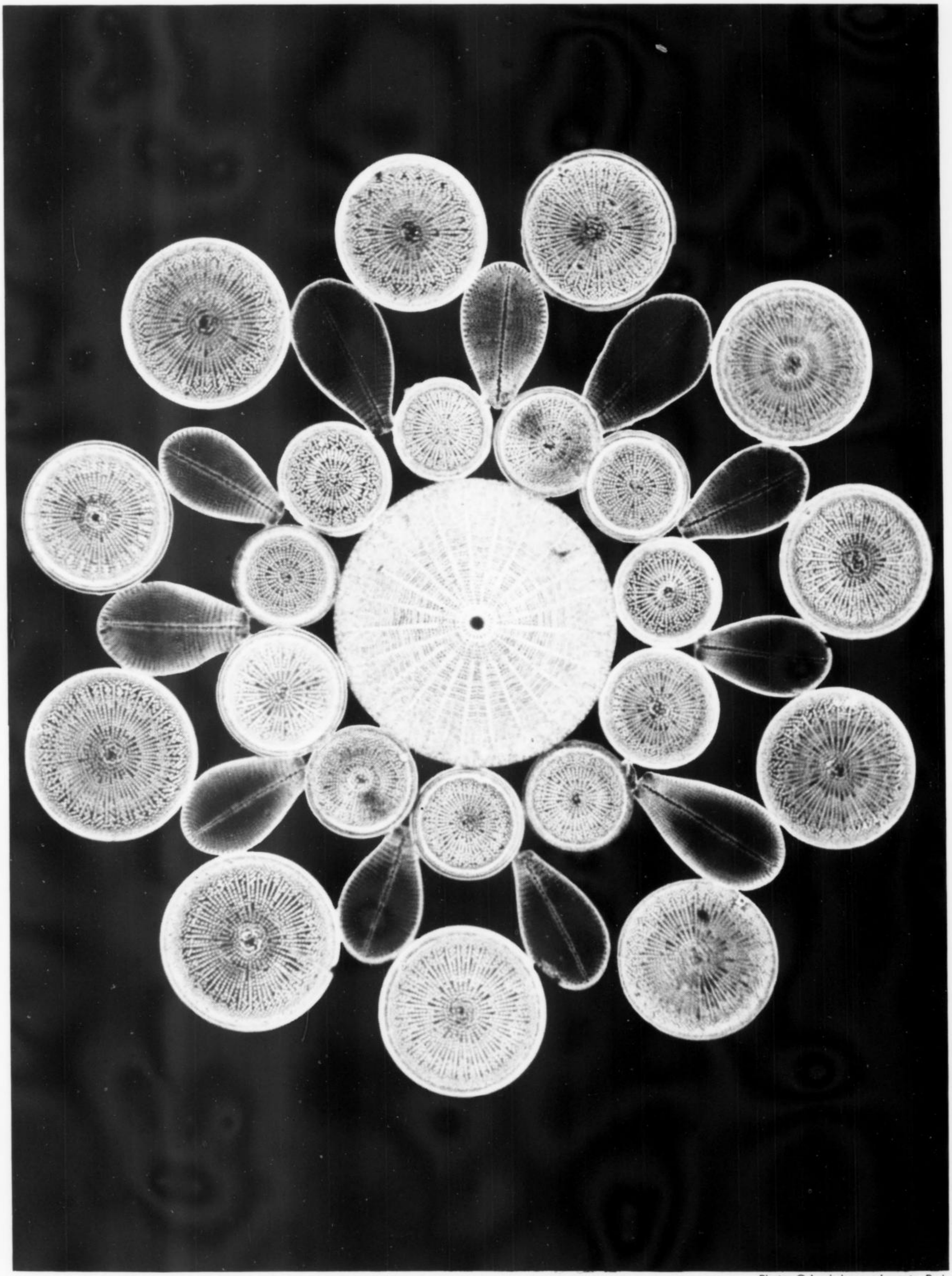
"In the dark night of the Middle Ages, the poet showed us Doctor Faust vainly labouring over his retorts to learn the mysteries of the world. Yet how many 'ardent hours' will have to be spent by the Doctor Fausts of the future if they want to understand anything about a living cell, because this cell, in order to be understood, apparently must be enlarged to the dimensions of a universe!"



An elephant's trunk? That's almost it. The trunk (or proboscis) of a butterfly takes on such elephantine proportions under the microscope.



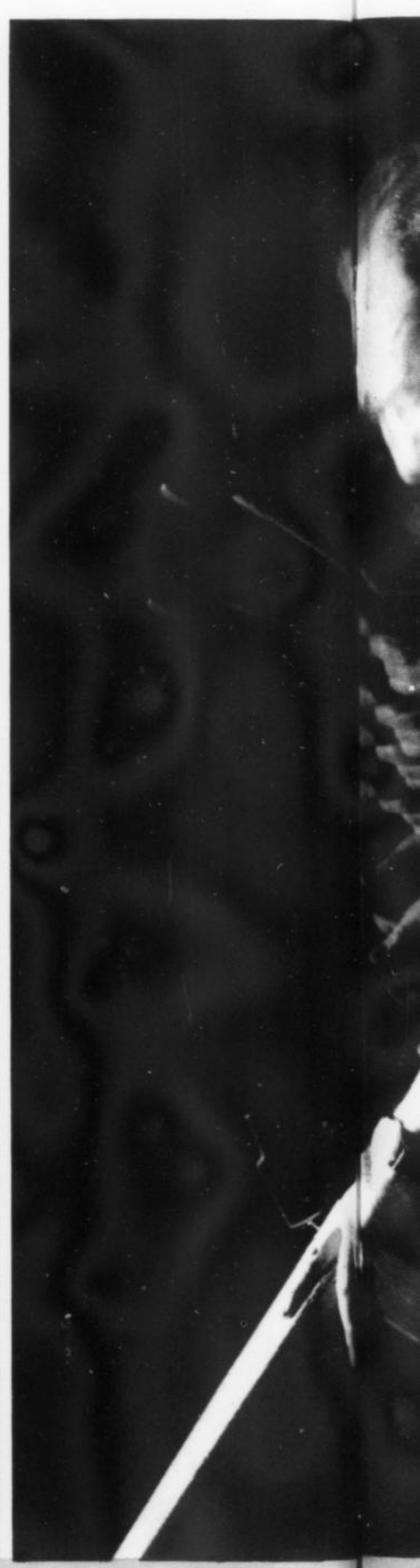
Man never seems to go nature one better, not even with braided rugs. This handsome specimen is the cross-section of a sea-urchin's spine.



Photos © Louis-Jacques Laporte, Paris

The avid diatom collectors prize such jewel-like creations as this one, arranged with diatoma from Madagascar.

Strobophotography sees WHAT OUR E



WHICH MAN IS THE PROFESSIONAL?

Two men striking a nail into a board seem to the ordinary observer to be making an almost identical motion. By the process of strobophotography, however, a marked difference between the two is immediately revealed. Not only does the strobophoto show, even to the unpractised eye, that there is a difference in the way the hammer descends in the hand of the man on the left as compared to that of the man at the right, but an expert can look at the two photos and tell immediately who is the professional and who is the "Sunday" carpenter. Strobophotography tells why. The hammer at the right seems to plunge smoothly toward its goal while the one on the left is obviously moving along a more jerky path... but the one on the left is being wielded by a professional. Now look closely. Up at the top of its trajectory, the hammer hesitates (two images). The empty space between these two hammers and the five below it indicates that the carpenter has decided to strike and the series of five shows that he held back his

EYES DO NOT SEE

All Photos © André Salesse-Lavergne

hammer slightly while he was aiming it. Then there is only a blank space as the hammer crashes down on the head of the nail. This means that it was a hard, determined blow (the blurred image between the seventh position and the nail is the hammer photographed on the rebound, returning upward for a second blow). As for that even-spaced movement in the right-hand photo, it actually shows nothing but inexperience—the man with the hammer held back his stroke all the way down to the nail because he was afraid of missing it... and perhaps he was afraid, too, of hitting his finger instead of the nail.

by André J. Salesse-Lavergne

TAKE a look at the minute hand and the hour hand of your watch. Can you see them move? Of course not. Yet, you know from experience that they are moving at different speeds but always constantly and regularly.

Now open the hood of a car with its engine running and look at the fan. What can you see? At best, you will be able to make out a vaguely circular blur, surrounded by a halo and shot through with moving lines resembling rays without any solid substance. You certainly will not be able to describe the exact shape of the fan blades.

Our eye may be very sensitive to certain phenomena of light, but it does not enable us to observe directly either slow movement (the hands of a watch) or rapid movement (the blades of a fan).

To tell the truth, this relative infirmity of our eye does not bother us at all in daily life. All we ask from our eyesight and its often-indispensable ally, our hearing, is to give us a quick and adequate picture of our surroundings so that we can act to preserve and maintain our lives.

Actually, by limiting the range and acuteness of our senses to grasp the world surrounding us, nature has tried to spare us an incessant assault by an infinite number of sensations which are not really needed for our mental or physical activities and which might even harm us by creating disturbances in our lives.

But man in his evolution and progressive conquest of the forces of nature has always sought to penetrate the mysterious laws which force him to think "universally" — that is, beyond the range of his own senses. Little by little, he has conceived ways of enabling him to expand the frontiers of his knowledge. As far as eyesight is concerned, the magnifying-glass, the microscope and the telescope have opened the long-forbidden worlds of the infinitely small and the infinitely large.

WITH the invention of photography, man took a new and very important step. It meant that he could halt the march of time to obtain eye-witness evidence and irrefutable proof of phenomena which he previously had studied only through guesswork and hypotheses based solely upon sensory observations —which were often erroneous—or else the whims of his memory.

In other words, photography gave man a new sense. It amounted to a concrete form of memory retaining only facts. This infallible "memory" certainly meant steady progress along the road to an objective study of events and facts, but one important element was still lacking.

As we all know, photography can offer us only a snapshot of a very brief aspect of an event observed in space and time. If all we want to learn is this aspect, then we can be satisfied. But if we also want

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THE STROBOPHOTOGRAPH

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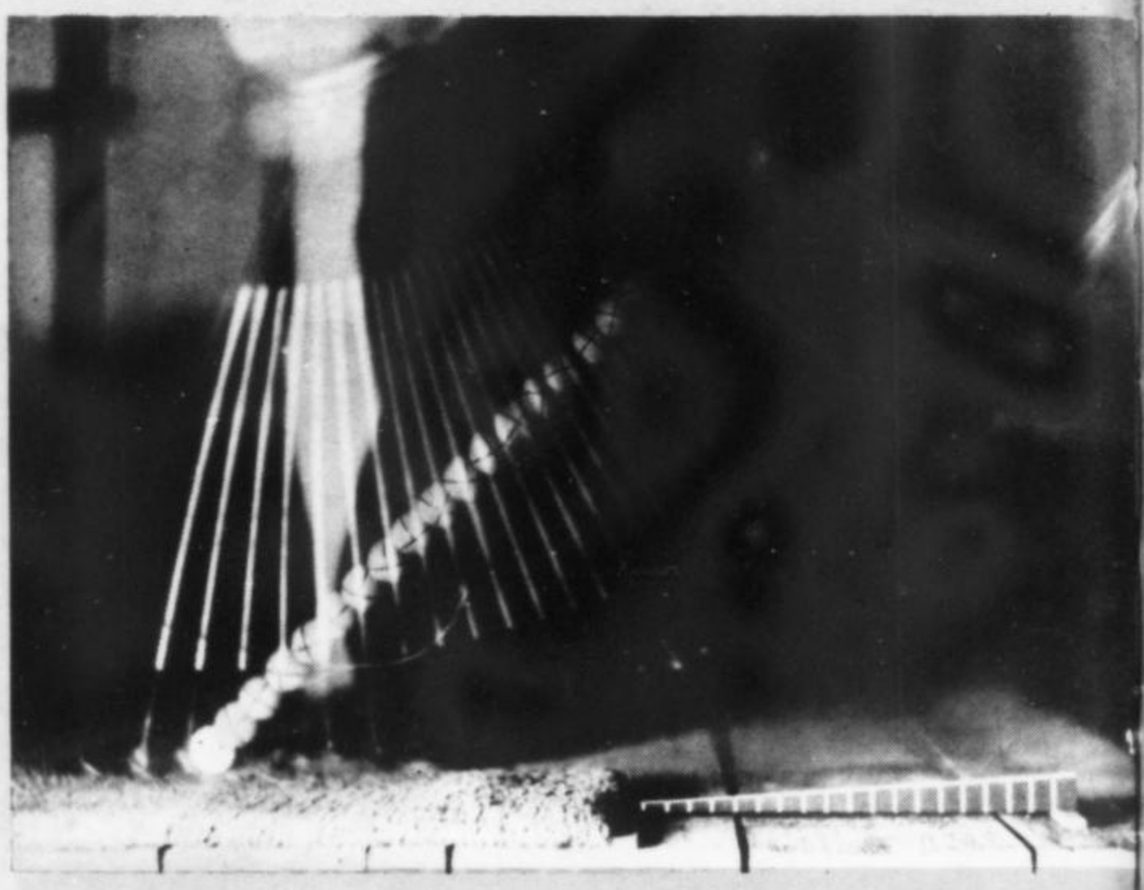


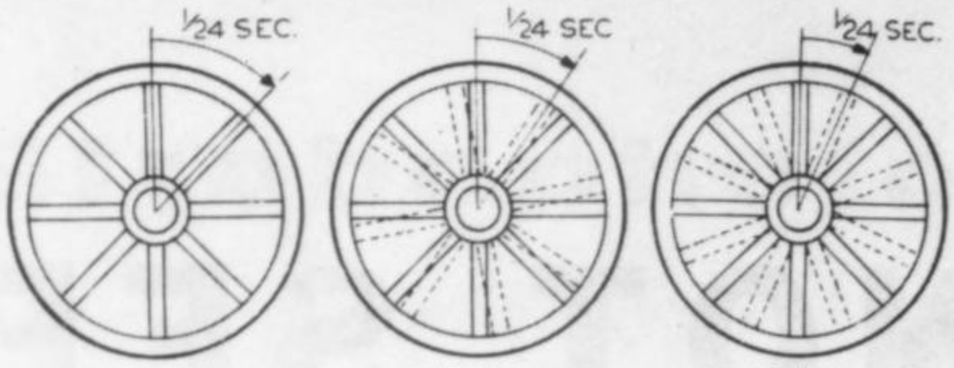


Fig. 1

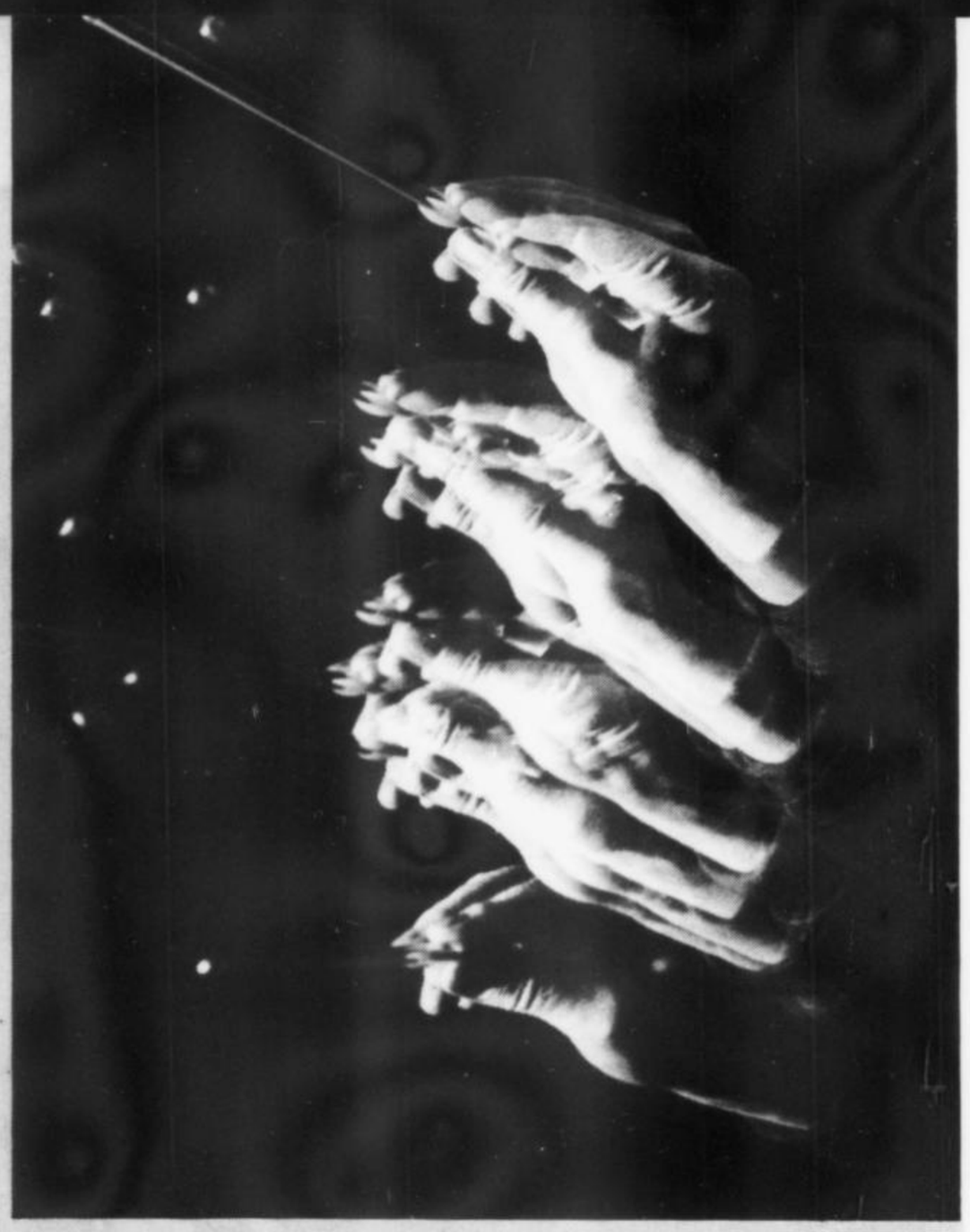
Fig. 2

Fig. 3

Optical illusion known as the "stroboscopic effect" was discovered in 1828 by Plateau, a Belgian scientist who showed that two spoked wheels placed on the same axle and rotating at the same speed, but in opposite directions, will appear to the human eye as a single and motionless wheel. Today, in films, spoked wheels of cars or machines occasionally seem to be rotating backwards. Each image remains motionless on the screen in front of your eyes for 1/24 of a second. If, during this interval, the wheel moves the exact distance separating one spoke from another, then the spokes and the wheel appear to be stationary (Fig. 1). But if the wheel moves over a shorter distance than that separating two of its spokes, it will appear to be moving backwards because your eye will have the illusion that the spoke has moved slightly backward instead of forward. Another phenomenon occurs when a wheel, during this 1/24 of a second, moves exactly half the distance between two spokes. It appears to have twice its true number of spokes. At right is shown one of the pioneer stroboscopic photos made by General Libessart of France, who studied what happens to a golf ball when it is hit. He used a device known as "stroborama", capable of 1,500 images per second.

Photos © André Salesse-Lavergne

HOW TO TAKE A STROBOPHOTOGRAPH. These three photos of the same subject illustrate the difference between strobophotography and photography. At left, a snapshot made at one-fiftieth of a second of a woman striking a match to light a candle. In the centre photo, the lens of the camera has been left open while she struck the match, placed it on the candle and then moved the candle. The result is a "photogram". At right, the lens has remained open but the photographer has used a special apparatus, called



Magic of an orchestra conductor's hand as it creates music is dissected here by this strobophotograph, taken in the dim light over his stand. Long, delicate fingers contrast with the confident and authoritative movements of the baton, none of which could be seen by normal sight.

Right and wrong way of designing a car's boot lid are shown in these two photographs. In the model tested at far left, the lid showed a tendency to smack the startled motorist's nose on its way down, a design fault brought out clearly by the stroboscopic camera (the driver has to lean forward to close it). At left, a lid comes down effortlessly, enabling the driver to stand well clear of it. The manufacturer thus knows even before production begins that the problem has been solved.

a flash generator, which flashed while the candle was being lighted with the burning match. This is a true strobophotograph, breaking down the individual phases of motion. Industry has already used strobophotography very profitably and educators now realize its value.

Photos © André Salesse-Lavergne

AMAZING SURREALISTIC BALLET

to know what preceded it and what is going to follow it, we must have a method of investigation which is capable of capturing the event in its full run through space and time.

The principle of this method was invented by a French physiologist, Etienne Marey, when he succeeded in taking successive snapshots at the rate of twelve images per second with his famed "chronophotographic gun". This enabled him to study the entire process of an object in motion.

Later, other inventors, including the Lumière brothers, discovered a mechanical system for "parading" images in front of a lens. This meant that motion could not only be photographed but reproduced as well. Chronophotography became cinematography. Both of these techniques offered an extremely important new opportunity to scientific research: the events they recorded could now be analysed as many times as was required.

Strobophotography is a method of investigation based both on chronophotography and cinemaphotography. The methods it uses are rather similar. But it presents one striking difference which anyone can detect : the apparent strangeness of the final result. For a strobophotograph gives us a very unusual picture of human beings in motion. Their familiar gestures are turned into amazing and surrealistic ballet movements. They look as if double exposures had given them additional limbs or even bodies. One is even tempted to believe that it is all a fake—just as if a number of images had been superimposed. It is not a fake however. A strobophotograph is absolutely authentic. It is taken with only one shot and during the elapsed time of the motion it represents.

IF a person being photographed seems to be using five arms to greet a friend or a worker is apparently using a dozen identical tools, the explanation is very simple. A motion picture film would capture these same movements with a number of small images. Each of these images is a "snapshot" of an infinitely small phase of the movement. Later, the images are developed over a certain length of film which must then be projected for the movement to be analysed.

But strobophotography does not use a number of pictures to capture these different and separate snapshots. Instead, it registers them on a single negative which remains motionless inside the camera. On this single negative, all the phases of a movement are recorded.

Those multiple hands, ghostly bodies, two-headed creatures and doors opening on to infinity form a dream world which can inspire artists, attract poets and stimulate our imagination. But the scientist and the technician are interested in them as well. To tell the truth, strobophotography is used most often by scientists for it is the child of science.

In 1934, General Libessart used a "stroborama" invented by the Seguin brothers to study what happens to a

CONT'D ON NEXT PAGE

VALUABLE AID FOR EDUCATORS

golf ball when it is hit. It enabled him to determine its speed (147 feet per second) and its rate of rotation (200 revolutions per minute). Edgerton in the United States has been carrying out major research along these lines at the Massachusetts Institute of Technology. He is particularly famous for the shots he made in 1949 of Abdessalam, the tennis champion, with the help of a lamp flashing at a rate of fifty times per second.

Since strobophotography can supply the exact data needed to solve a large number of problems, it has many applications. Among them are : the study of simple movements in order to achieve a scientific organization of work ; the study of human conduct in the presence of natural or accidental situations ; the study of individual or group reactions to certain tests; and generally speaking, objective observation of outward manifestations.

Strobophotography can also be used profitably by industry. For example, the styling department of a big European car manufacturing firm recently put it to work in order to study ways of increasing driving safety and comfort in its new bodies.

THERE are two fields, however, where strobophotography can play an extremely important part: education and the preservation of our culture. Today, education is making increasing use of visual aids which stimulate individual effort through their stress on observation, attention, learning by memory, reasoning, and aesthetic sensitiveness. Strobophotography would be an extremely valuable aid if educators were willing to use it. In developing countries where new "active" methods of learning are to be introduced, it would help young minds to grasp facts.

In these same countries, there is also a vital need to train workers in those basic movements which are to be found in modern industry. In this connexion, you need only look at the hammer-blow experiment shown on page 29 to realize the contribution that strobophotography can make to vocational education.

As for our cultural heritage, it can also derive great benefit from strobophotography. As a result of economic, technological and social progress throughout the world, traditional gestures are vanishing every day and others are condemned to vanish very shortly. Just about everywhere on earth, customs are dying out, so-called folk dances are losing their original meaning and ways of life are doomed to oblivion. Yet the least of these customs is fraught with joy, suffering, belief, hope or simply humble truth making it worthy to be preserved in mankind's heritage.

We could make a precious contribution to forthcoming generations if we recorded these human "relics" which are now expressed in so many different ways. Strobophotographic archives would be a priceless treasure for ethnology and the humanities. Just imagine for a moment if, through some miracle, we had a series of strobophotographs showing the life of our Cro-Magnon ancestor and, particularly, the way he shaped his flints. Then you will understand the value of such archives.

Photos © André Salesse-Lavergne

Getting in and out of a car is easy... thanks to the engineers who have ironed out any design quirks forcing passengers to undergo contortions. In running down such quirks, strobophotography is an invaluable ally. Above, a passenger gets out of a car's seat in a laboratory. Below, a breakdown of the movement made by the passenger sitting next to the driver when he enters a car. For a negative of the photo above in which the movement of the hands can be studied to greater advantage, see the same photo page two.

Letters to the Editor

TELL US ABOUT FOLKLORE

Sir,

The presentation of your magazine and the quality of the articles are both remarkable. However, I should be glad to read some articles dealing with the folklore of different countries. I believe that a knowledge of folklore can help to encourage real understanding between peoples. As such it is well in line with the principles of UNESCO which stands for brotherhood and mutual understanding.

G. Carol
St-Brieuc, France

CULTURE IS UNIVERSAL

Sir,

One of your readers recently wrote that in his opinion, "UNESCO is founded on a fiction: the equality of peoples, nations and races. This equality is true before God, but does not exist in fact... Your magazine therefore faces two obstacles: either you describe the countries of the world as they are, thus risking the criticism and resentment of your less privileged members or else you look at everything through rose-coloured spectacles with the result that you place the Papuan tom-tom on the same level as Mozart . . ."

Learned, anthropologists, theologians and others will answer this unrealistic criticism of UNESCO better than I can . . . I would say this: it is a fact of science that peoples and races are equal, not only before God, but also *biologically*. Some races, peoples, and nations are underdeveloped culturally as well as technologically. Yet every group has something to offer from which all may learn. For example, the American Indians, although they never produced a United Nations building in New York or a Victor Hugo, did produce a working, successful parliament of the Indian nations from which the founders of the United States are believed to have taken ideas.

As far as UNESCO's placing of "the Papuan tom-tom on the same level with Mozart" is concerned, I am not aware that UNESCO does this. This would be as silly as placing America's singing commercial, which Adlai Stevenson has called our "national litany", on a level with Marian Anderson's transcendent interpretation of Brahms' "Alto Rhapsody". But, UNESCO might give us an anthropological study of the singing commercial, and such a study might be not only interesting but valuable.

There is much in primitive cultures that is not good but bad. In our effort to "understand" these cultures we should not overlook the bad anymore than we should overlook the good. Polygamy and polyandry, for example, are not good, but then neither is promiscuity—and my own country, the United States, is certainly not free of the latter. So, without being the ones to cast the first stone, we can at the same time be realistic in our evaluation of what is good and what is bad. Meanwhile, UNESCO is doing a great service in helping nations and peoples to understand each other. It deserves our wholehearted support.

Palmer Van Gundy
Glendale, California, U.S.A.

THE MENTALLY HANDICAPPED

Sir,

I think one issue, or part of an issue, of your magazine might be devoted to the problem of France's 600,000 mentally deficient children—which is the same problem all over the world, where mental defectives exist in similar proportions. This is a tragedy which can strike any family, for congenital mental deficiency (mongolism, deficiencies occurring as a result of German measles in the mother or complications of tubercular meningitis, the Rhesus factor, anoxaenia, vaccinal encephalitis or a forceps birth) has nothing to do with alcoholism.

In France there are only 3,000 classes for the slightly sub-normal, whereas over 20,000 are required. As for the seriously sub-normal, whenever a vacancy occurs in one of the institutions for remedial education two or three hundred applicants are waiting.

After school-age the problem of mental deficiency is even more tragic. The adolescent (and there are tens of thousands of them) has no hope of becoming a worker, or even having some occupation. Once his parents are no longer there to care for him, there is only the asylum.

Scientific progress saves many children who were condemned before the discovery of "miracle" drugs, leaving doctors with other problems for which there are so far no solutions. But as Professor Heuyer, creator of the chair of child psychiatry in France, has said, "Any progress a child can make, even at the lowest intellectual level, is worth while." We must not forget it.

P. Careme
Virey-le-Grand, France

THE CLOCK WAS SLOW

The March issue of the *Unesco Courier* gives a very graphic picture of how young—geologically speaking—man really is. It is not altogether easy to date the fossils that are found, but some of the estimates of their age given in the article are too high, and others too low. The following points need to be corrected for the period after "six p.m.".

The lower jaw of the Heidelberg Man (the oldest find in Europe) is 450,000 years old; the Swanscombe skull about 300,000-275,000; the remains found by Ehringsdorf near Weimar 130,000; and Neanderthal Man 120,000-100,000. Homo Sapiens (the present type of man) who supplanted Neanderthal Man can look back on at least 100,000 years' existence.

Dr. G.H.R. von Koenigswald
Holland

FOUR-LEGGED GUIDES

Sir,

In your issue, "New Pathways for the Blind" (June 1960), I feel that a serious omission was made in the lack of any reference to Guide Dogs for the blind, or "Seeing-Eye" dogs. This movement, which started in Germany towards the end of the first world war, has now developed, both rapidly and soundly, in many countries of the world, in particular the United States of America and the United Kingdom. Australia, South Africa and Israel now have training centres, too, as have many European countries.

The training of both dog and blind person has been developed to a high degree, is scientifically based and is constantly being improved to give blind people the benefit of the most advanced training methods and techniques. The value of a Guide Dog, properly trained by qualified trainers, is being more and more appreciated by blind people who work with them or know of them, thus the demand is ever increasing.

Here, in Australia, the movement has been established for some ten years and this national organization is supplying Guide Dogs, trained to the highest standards, to blind people throughout the Commonwealth.

J. K. Holdsworth
Director of Training
Guide Dogs for the Blind Association
Belmont, Western Australia.

Sir,

As usual I enjoyed reading your issue on "New Pathways for the Blind", but in all the articles I did not see any mention of guide dogs. There has been some controversy in Australia as to whether there should be guide dogs, an expensive matter. Those against them say that they tend to make blind people less independent and self-reliant.

From a purely lay point of view it does seem a tremendous waste of time and money to spend on a dog which does not live as long as its master or mistress.

A. L. Mackay
Lindfield, Australia

From the Unesco Newsroom

UNESCO SALUTES FIRST MAN IN SPACE

Yuri Gagarine

On the occasion of the first man being fired into space from the Soviet Union, Dr. Vittorino Veronese, Director-General of Unesco, sent the following message to the Chairman of the Soviet National Commission for Unesco in Moscow :

"Have learned with deep satisfaction news of successful achievement of most recent Soviet experiment in outer space. The Government and people of the Soviet Union may be proud of this new scientific achievement. I beg you to convey to the Soviet National Commission for Unesco and to Soviet scientists and engineers my wholehearted congratulations.

Vittorino Veronese, Director-General."

REFUGEE CAMPS TO CLOSE: There will be no more refugees living in camps in Europe by 1962 according to Mr. Felix Schnyder, recently appointed U.N. High Commissioner for Refugees. Most camps in Austria, he said, would be closed down in 1961, and those in Germany and Austria during 1962. At the beginning of this year, there were still 13,000 refugees living in camps in these countries, under the U.N. High Commissioner's mandate. Another 60,000 were living outside in sub-standard homes.

■ **MOUNTAIN OF SALT:** *Near the town of Kulab in South Tajikistan, U.S.S.R., there is a mountain of salt which, say scientists, is sufficient to supply the domestic needs of the world's present population for a million years. The hill, called Hoja Mumin, is composed of pure salt covered with a thin layer of wind-borne sand and dust. The salt not only rises to a height of* 2,600 *feet above the surrounding countryside, but penetrates into the earth to a depth of nearly two and a half miles. It is over five miles in diameter.*

CLASSES IN THE SNOW : "Snow Classes", an experiment started in France in 1953, have proved beneficial to children's intellectual as well as physical development say French educators. The classes, in which thousands of French schoolchildren take part each year, enable boys and girls from the cities to spend about a month in the mountains with their teachers and physical training instructors. In the mornings, lessons are held as usual, while in the afternoons the children are taught skiing and other outdoor sports.

■ **TAGORE CENTENARY CELEBRATED:** *Countries all over the world are this month honouring the centenary of the birth of Rabindranath Tagore, India's celebrated poet and writer. As a prelude to this year's celebrations, a special performance of "Chitra", a play by Tagore, was given in Paris last November at* UNESCO *House, during the* UNESCO *General Conference. Two films are being produced to commemorate the Tagore Centenary by one of India's foremost film-makers, Satyajit Ray. One is a medium-length documentary on Tagore's life ; the other is a full-length feature based on three of his short stories.*

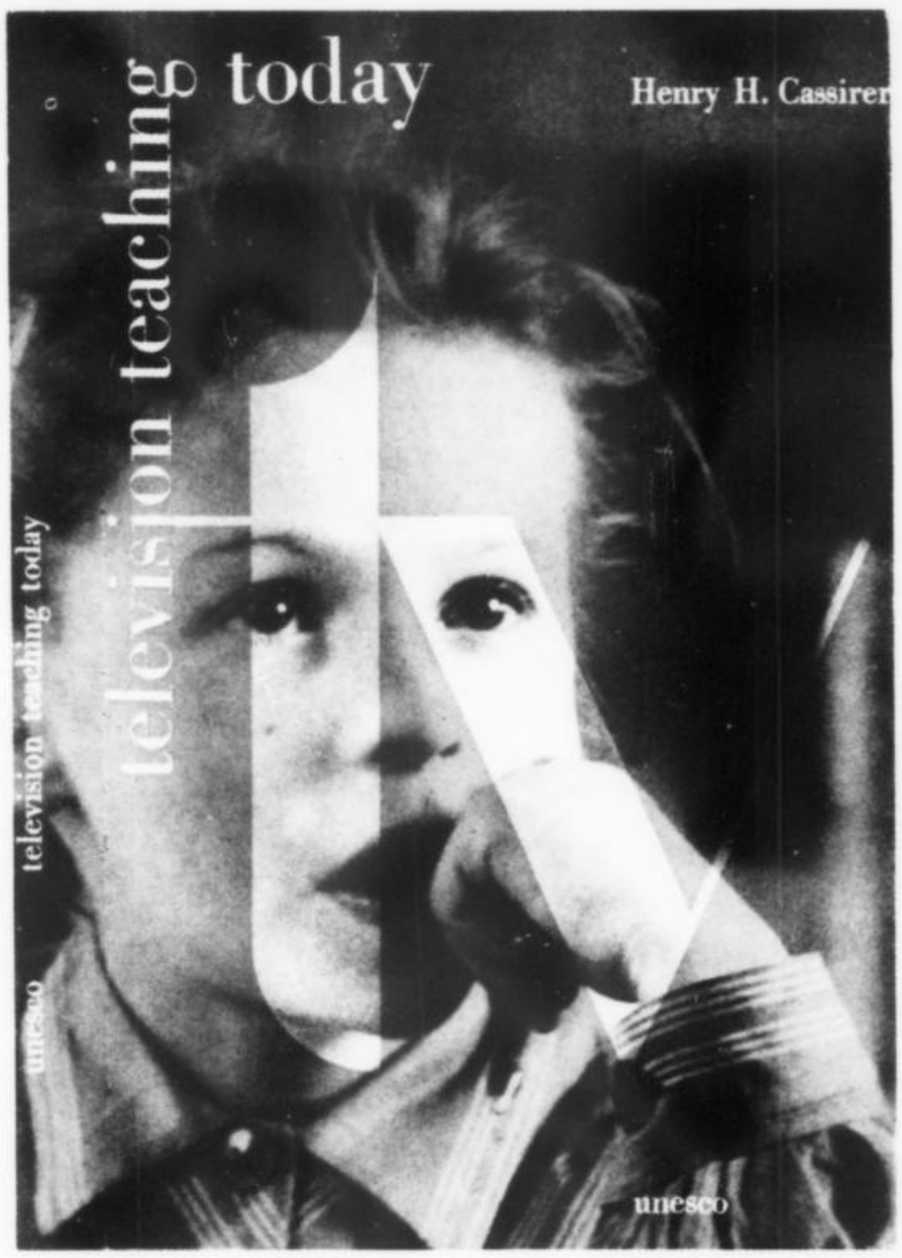
SCHOOLS FOR AFRICA: Tropical Africa, comprising 30 countries from Ethiopia to the Congo and from Senegal to Madagascar, has 25 million children of school age. Yet 17 million have no schools to attend and of the "privileged" 8 million only a minority complete primary education. Forty African states and territories and five European countries with African responsibilities have been invited to a meeting in Addis Ababa, Ethiopia, this month, to discuss ways and means of developing education in Africa. Held under the joint auspices of UNESCO and the U.N. Economic Commission for Africa, the conference will be attended by Ministers or Directors of Education for the African countries. UNESCO's own programme for 28 countries in Tropical Africa during 1961-62 amounts to about $11.5 million, including sums administered on behalf of the U.N. Special Fund and Technical Assistance.

■ **MOST MODERN MUSEUM:** *Visitors to the zoo and botanical gardens of the future Kuwait National Museum won't notice the baking heat of the Persian Gulf (sometimes* 120 *degrees F. in the shade). They will be taken around in a glass-roofed, air-conditioned train. When completed, the Kuwait Museum will be the world's most modern. In addition to the zoo and botanical gardens, it will have sections on ethnology, folklore, astronomy and the techniques of extracting and refining oil (source of Kuwait's riches). There will be vessels* 120 *feet long in its naval museum and, in its aquarium, a tunnel* 40 *feet long will enable visitors to walk along the "seabed" with fish on all sides.*

THE UNESCO PHILATELIC SERVICE

The work of the International Monetary Fund to promote a freer system of world trade and payments as a means of helping its member countries achieve economic growth, high levels of employment and improved standards of living is commemorated in the stamp above, which was issued on April 17 by the United Nations Postal Administration. Issued in 4 cent (blue and white) and 7 cent (brick red, yellow and white) denominations, this is the second of the 1961 series of U.N. commemorative stamps honouring U.N. Specialized Agencies. As the agent in France of the U.N. Postal Administration, UNESCO'S Philatelic Service stocks all the United Nations stamps currently on sale. It also has stamps and first day covers issued by many UNESCO member states to commemorate important events in the history of UNESCO and the U.N. (inauguration of UNESCO'S new headquarters, Human Rights Day, World Refugee Year). Information on items available, their price and the methods of payment will be sent on request by the UNESCO Philatelic Service, Place de Fontenoy, Paris-7e.

Imp. GEORGES LANG, PARIS. IMPRIMÉ EN FRANCE.



TELEVISION TEACHING TODAY

by Henry R. Cassirer

Educators everywhere are faced with the challenge of rapidly-growing school and college populations and the need for a new approach to the content and methods of teaching. Television may provide one of the answers to their problems. Dr. Henry R. Cassirer has undertaken a general survey of most of the principal countries which are using television for educational purposes. Some countries employ television for the enrichment of normal classroom lessons, others undertake direct teaching of numerous subjects to young or adult students who seek to improve and pursue their education. The book presents the problems which television poses to teacher and learner alike, and indicates ways in which television may be used constructively in support of the traditional values of teaching.

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The "International Social Science Journal" is published quarterly. Its contributors are specialists of renown, from all countries, who are asked to prepare a series of articles on the subject of scientific interest chosen for each issue. In the treatment of these subjects an attempt is made to bring out the interdisciplinary and international character of social problems and the social aspect of present day life. Occasionally an issue contains studies involving only one discipline, dealing usually with problems of particularly great international interest.

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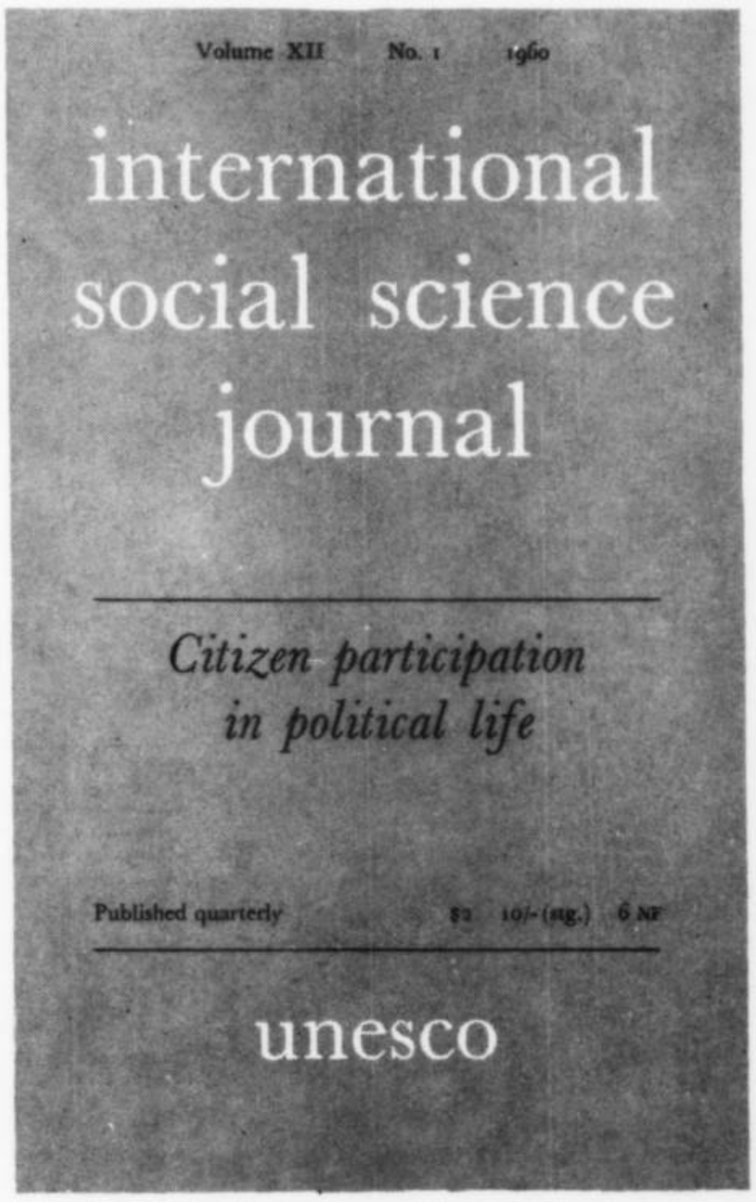

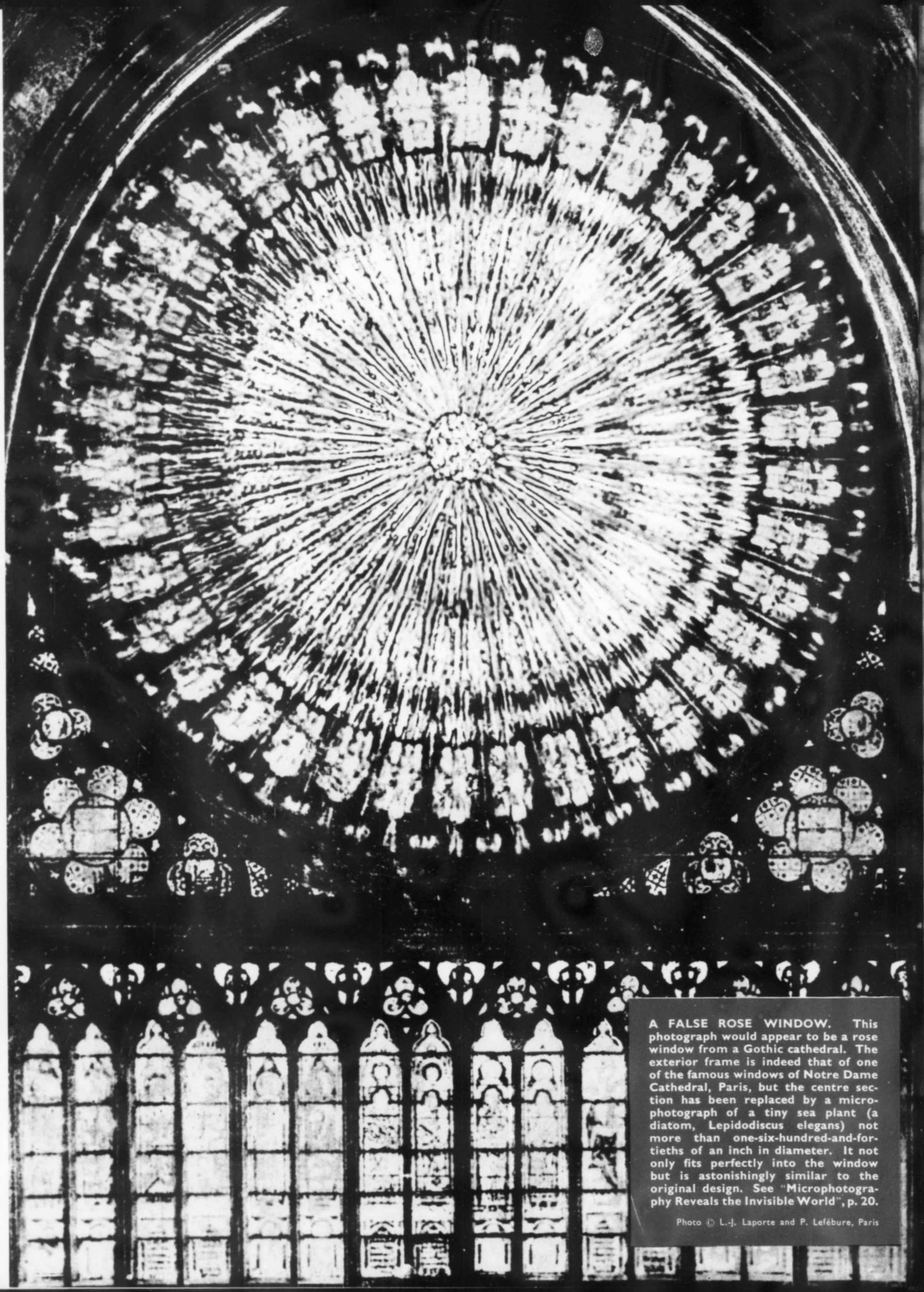

A FALSE ROSE WINDOW. This photograph would appear to be a rose window from a Gothic cathedral. The exterior frame is indeed that of one of the famous windows of Notre Dame Cathedral, Paris, but the centre section has been replaced by a microphotograph of a tiny sea plant (a diatom, Lepidodiscus elegans) not more than one-six-hundred-and-fortieths of an inch in diameter. It not only fits perfectly into the window but is astonishingly similar to the original design. See "Microphotography Reveals the Invisible World", p. 20.

Photo © L.-J. Laporte and P. Lefébure, Paris